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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
HAZARDOUS WASTE INVESTIGATIONS AND CLEANUP PROGRAM

January 20, 1989

TO: Bob Kievit, EPA WOO PA/SI PO

THROUGH: Bob Goodman BG

FROM: Michael J. Spencer MJS

SUBJECT: Site Inspection Report Addendum Transmittal

Attached is a copy of an addendum to the Weyerhaeuser Chlor-Alkali Site Inspection Report from November 1986.

The lack of any significantly affected population causes this site to score low enough on preliminary HRS scoring of both the deeper, utilized aquifer and the shallow, contaminated aquifer that I an recommending no further action by PA/SI, with continued oversight by Ecology Industrial Section.

Copies of the two scoring sheets are also attached.

MJS:BG:rs
Attachments

Christine O. Gregoire
XXXXXXXXXXXXXXXX
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Mail Stop PV-11 • Olympia, Washington 98504-8711 • (206) 459-6000

ADDENDUM

SITE INSPECTION REPORT

Weyerhaeuser Co. Chlor-Alkali Plant
Longview, Cowlitz County, Washington

WAD009041450

January 1989

Washington State Department of Ecology
Hazardous Waste Investigations and Cleanup Program
Preliminary Assessment/Site Inspection Unit

January 20, 1989

Addendum to Weyerhaeuser Chlor-Alkali,
WAD009041450, Longview, Site Inspection Report

Michael J. Spencer

Introduction

The November 1986 SI report for this site recommended that Weyerhaeuser:

i) Submit a plan and schedule of implementation for a series of not less than two shallow monitoring wells in the area west of the pulp mill effluent lines and east of the boat launch ramp halfway between the paved parking lot currently in use and the river, along with one upgradient well. These were to serve to monitor for any past or future lateral migration of mercurial species.

ii) Make proper notification about appropriate safety concerns to be exercised during any excavations required in their future development of the west site property. A notation on the deed to the property should be recorded that will in perpetuity notify any potential purchaser that the documented levels of mercury contamination are present.

iii) Obtain further quantification of the residual mercury contamination at the east site and the caustic storage ditch, with appropriate and timely consultation with Ecology regarding any sampling and hydrogeological studies.

As a follow-up to these recommendations, Weyerhaeuser has now completed the following:

In April 1987 they had contractors (Sweet-Edwards/EMCON, Inc., Kelso, WA) develop and submit to Ecology for review a work plan for the installation of one up and two downgradient monitoring wells on the west side of the site. An expanded assessment of residual mercury contamination on the site east side was also included, plus an implementation schedule for installations/sampling.

With respect to the second above recommendation, the work plan stated:

Construction Safety at the West Site - Any future construction plans which may involve the west site area will include additional safety procedures specific for the potential exposure to residual mercury in the surface soils in certain areas.

Property Deed Notation - A notation on the deed to the property will be recorded that will in perpetuity notify any potential purchaser

that the surface soils in certain areas of the west site contain elevated residual mercury concentrations.

Weyerhaeuser agreed to both the installation of one additional downgradient well as per my May 1987 review (Appendix B) and to a joint sampling event for collection of split samples from the east side area. The work plan was finalized in June 1987 (Appendix B), with wells installed the following month.

Soil samples were collected at two and one-half foot intervals during the well installations, with analyses made for total mercury and mercury EP Toxicity. Monitoring well samples were collected, beginning in early August 1987, through August 1988. Surface water samples were also collected from three locations adjacent to the Columbia River in September 1987 and May 1988. A surface water sample was collected from the marsh/wetland area at the extreme west edge of the property in May 1988. Water samples were submitted to Weyerhaeuser's laboratory for analysis for mercury, pH and specific conductance.

Soil samples were collected at varying depths at seven locations on the site east side on June 16, 1987. Following backhoe excavation, soil samples were collected from each visually different strata or at least three depths (usually two, five and ten feet). Bottom sediment samples at two locations along the storm water drainage ditch adjacent to the northeast corner of the former chlorine plant cell room building were also collected.

Seven sample splits were collected by Ecology at four locations as described in Table 1, as well as from the two ditch samples. A separate sample was collected from the bank of the Columbia River, just above the boat launching ramp.

Results and Discussion

The February 1988 status report by Sweet-Edwards (Appendix A) describes the installation of four monitoring wells and analytical results for the soil samples collected July 20-23, 1987 and water samples collected August 1987 - January 1988.

Mercury concentrations in the soils were above the detection limit (0.1 mg/kg) in 6 of the 34 samples collected. These samples were:

Well	Sample Depth	Concentration (mg/kg)
MW-2	10-11.5 ft.	0.46
MW-3	5-6.5 ft.	1.9
MW-4	5-6.5 ft.	0.2
MW-4	7.5-9 ft.	0.2
MW-4	10-11.5 ft.	0.1
MW-4	22.5-24 ft.	0.1

None of the soil samples had mercury concentrations which exceeded the 0.2 mg/L EP Toxicity limit.

These results correlate well with those presented earlier (Section 5) whereby on the west site the mercury concentration fell off sharply with depth, with the maximum value recorded being 16 mg/kg at the two-foot depth and the highest concentration at depths seven feet or greater (to 15 foot maximum) being 0.8 mg/kg. Detectable levels of extractable mercury were likewise not determined in the earlier EP Tox determinations.

Water samples from the monitoring wells were collected on four separate dates: August 5, September 3 and November 4, 1987, and January 12, 1988. The 0.002 mg/L Primary Drinking Water Maximum Contaminant Level (MCL) was exceeded in two of the monitoring wells. On August 5, 1987 and January 12, 1988, the mercury concentrations in well MW-3 were 0.004 and 0.003 mg/L, respectively. Mercury concentrations in samples from well MW-4 exceeded the MCL on each of the four sample dates. Concentrations ranged from 0.012 to 0.039 mg/L, 6 to nearly 20 times the MCL.

Four further monitoring well sampling events, as well as several surface water sample collections, occurred during the ensuing period ending August 5, 1988. A summary of these results, together with the earlier ones, is presented in the November 7, 1988 report by Sweet-Edwards/EMCON, Inc. (Appendix A). Again, mercury concentrations exceeded the MCL on all sample dates for MW-4, ranging from 0.0026 - 0.021 mg/l. During the eight-event monitoring period of August 1987 - August 1988, the upgradient monitoring well, MW-1, recorded a detectable mercury concentration only once, this being 0.0005 mg/l on January 12, 1988. Although this is only a quarter of the MCL, it does establish a significant contamination of downgradient ground water by mercury (significance here being defined as five or more times the background concentration, or three or more times the minimum level of detection).

On only one occasion (May 5, 1988) did a surface water sample (5-X) record a detectable mercury concentration (at a level of detection, 0.0002 mg/l).

Depth to ground water was also measured for the four monitoring wells during the one-year study period. It ranged from about eight to 15 feet below ground surface. The depths fluctuated seasonally approximately 2-2.5 feet, being lowest in late summer and highest in late winter. There was an apparent inverse relationship between water table elevations and measured mercury concentrations. During the period November 1987-August

1988 increases in water table elevation corresponded with decreases in ground water mercury concentrations, due likely to dilution and/or increased ground water flow rates resulting from increased incident precipitative recharge to the shallow ground water aquifer. The flow of this shallow ground water was shown to be southwest toward the Columbia River.

The results of the split samples taken from the east site showed a good comparison between Ecology Manchester Laboratory and Weyerhaeuser's laboratory, as shown in the following table:

East Site
Total Mercury Concentrations (mg/kg)

Location No.	Depth (feet)	Ecology Analysis	Weyerhaeuser Analysis
1	5	4.9	4.9
1	10	7.8	34
2	5	1.3	1.5
2	10	0.21	0.32
4	2	5.4	5.3
4	10	0.55	2.3
5	10	0.15	0.31
Upper ditch	--	4.1	15
Lower ditch	--	17	35
River bank	--	0.078	--

The mercury concentrations again showed a decrease with increasing depth in most cases, except for location 1, where the highest recorded soil sample mercury concentration of 34 mg/kg was at the third depth sampled (10 feet), similar to earlier results in Section 5 where site E-5 had a concentration of 27 mg/kg, at the deepest depth able to be excavated (i.e., at bedrock, 5 feet in this case). Bedrock exists in the area at 5-10 feet depth.

It appears from a comparison of the analytical results that the mercury concentrations as measured by Weyerhaeuser were rather consistently higher in magnitude (seven out of 11 measurements) than Ecology's.

Final Conclusions and Recommendations

On-site soil and ground water sampling conducted by Weyerhaeuser during 1986-1988 has documented significant contamination of both by total mercury, relative to background concentrations. EP Tox determinations, however, have shown the mercury to be relatively immobilized, probably due to the presence of numerous clay layers with increasing depth. Although the ground water mercury concentrations often exceeded the MCL for

drinking water, there is no known use of this shallow water table aquifer for drinking water, or any other purposes.

Off-site migration of mercury was not detected in terms of fish tissue samples, river sediment samples or localized surface water samples.

The major source of drinking water for the Longview area is from a surface water reservoir several miles upstream on the Cowlitz River. Only a limited number of private domestic wells are found within a three mile radius, these drawing from the deeper regional aquifer rather than the shallow alluvial water table aquifer on-site (Appendix B).

The likelihood of surface water contamination (Columbia River) is drastically minimized by the apparent immobility of the mercury, constant dredging of the river offshore of the site and immense dilution effect of the river.

It is concluded that the on-site mercury contamination poses negligible risk to human health if the affected areas remain adequately covered and undisturbed. If the latter occurs, necessary precautions must be taken in terms of personal safety and concerns of any off-site disposal. Additional notification to the property deed need be made to cover the extensive surface mercury contamination of the east site area.

On the basis of the above, it is recommended that the PA/SI Unit pursue no further action at this site and that it be removed from the active CERCLIS list of potential hazardous waste sites. The continuing oversight of this site by Ecology Industrial Section should include periodic updates by Weyerhaeuser of monitoring well analyses for mercury.

TABLE 1

Ecology Sample No.	Weyerhaeuser Location No.	Depth (feet)	Notes
1	2	5	Ground water at five feet, site is 80'N, 30'E of E-5
2	2	10	
3	4	2	Did not hit ground water, black organic/sandy.
4	4	10	
5	5	10	Nearest to E-5.
6	1	5	In middle of former brine pond.
7	1	10	
8	Upper ditch	--	Near old cell room 300 ft. east.
9	Lower ditch	--	
10	River bank	--	Just upriver from boat ramp.

APPENDIX A
SAMPLE RESULTS

Weyerhaeuser Paper Company

Longview, Washington 98632
(206) 425-2150

December 27, 1988

Michael Spencer
Hazardous Waste Clean-up Program
Washington Department of Ecology
MS PV-11
Olympia, WA 98504

Dear Mr. Spencer:

Re: Chllor-Alkali Plant Mercury Investigation

Enclosed is a copy of the Sweet-Edwards/Emcon, Inc. Report entitled "Weyerhaeuser Paper Company, Chlorine Plant-Longview Mill Site, Soil and Ground Water Investigation".

As the title implies, this report summarizes data collected since the summer, 1987 to assess possible soil and ground water mercury contamination in the vicinity of our chlorine plant. You will recall this latest field study was in response to recommendations made by WDOE and EPA in your February 16, 1987 site investigation report. Weyerhaeuser responded to that report by proposing a study plan in April, 1987 which was reviewed and approved by you in May of that year. An interim report on these field studies was submitted to you on March 28, 1988.

We are available to meet with you to review the report. In the interim, we will continue to conduct groundwater monitoring on the same bi-monthly schedule.

Ken Johnson /vj

Ken Johnson
Environmental Manager

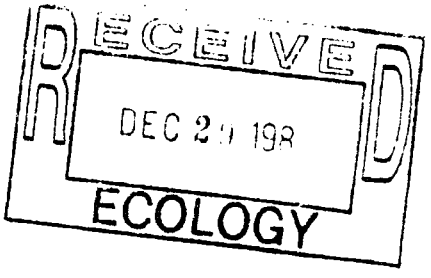
KJ:vj
D2-T1;KJv12-27-88

WEYERHAEUSER PAPER COMPANY

CHLORINE PLANT - LONGVIEW MILL SITE

SOIL AND GROUND WATER INVESTIGATION

November 7, 1988



SUBMITTED TO:

Weyerhaeuser Paper Company
Longview Mill Site
Longview, WA 98632

SUBMITTED BY:

Sweet-Edwards/EMCON, Inc.
P.O. Drawer B
Kelso, WA 98626

WEYCO-R.N07 TS
S4101.02

Rev. 1, 11/07/88

WEYERHAEUSER PAPER COMPANY
CHLORINE PLANT - LONGVIEW MILL SITE
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APPENDICES
(following text)

WEYERHAEUSER PAPER COMPANY
CHLORINE PLANT - LONGVIEW MILL SITE
SOIL AND GROUND WATER INVESTIGATION

1.0 EXECUTIVE SUMMARY

1.1 BACKGROUND AND PURPOSE

Previous investigations by Weyerhaeuser have shown that there are low concentrations of mercury in the shallow soils near the salt storage piles west of the chlorine plant. The purposes of this investigation were to: 1) further define the extent of mercury soil contamination, and 2) determine the extent of mercury ground water contamination, if present.

1.2 WORK COMPLETED

Field investigation activity began in the area west of the Weyerhaeuser Chlorine Plant in July 1987. Four monitoring wells were constructed and soil samples were collected at 2-1/2-foot intervals. Soil samples were analyzed for total and EP Toxicity mercury. Soil/sediment samples were collected from three locations adjacent to the Columbia River in September 1987 and analyzed for total mercury concentrations.

Water samples were collected from the four monitoring wells on eight occasions between August 1987 and August 1988. Surface water samples were collected from three locations adjacent to the Columbia River in September 1987 and May 1988. A surface water sample was collected from the marsh/wetland area at the extreme west edge of the property in May 1988. Water samples were submitted to the laboratory for analysis for mercury, pH and specific conductance.

1.3 CONCLUSIONS

1.3.1 Soils

- Total mercury concentrations in soils were found to exceed the 0.1 mg/kg detection limit in three of the four monitoring well locations.

- EP Toxicity mercury concentrations in soils were found to exceed the 0.0002 mg/L detection limit for one sample each from monitoring wells MW-1, MW-2 and MW-3, and two samples from MW-4.

- Soil EP Toxicity mercury concentrations exceeding the detection limit were approximately 50 to 1,000 times less than the 0.2 mg/L EP Toxicity Standard.

1.3.2 Ground Water

- Mercury concentrations in ground water exceeded the detection limit on at least one date for all monitoring wells and in every sample from monitoring well MW-4.

- Mercury concentrations exceeded the MCL on two dates for monitoring well MW-3 and all dates for monitoring well MW-4.

- Water samples from surface water sampling sites were found to have mercury concentrations below the detection limit with the exception of the surface site S-X split sample sent to Weyerhaeuser Analytical Laboratory on May 9, 1988.

2.0 FIELD WORK

2.1 MONITORING WELL INSTALLATION

Four monitoring wells were installed at the locations on Figure 1. Monitoring wells MW-1, MW-2, and MW-3 were first installed to obtain ground water elevation data. The shallow ground water flow direction was calculated from this data and used to select a downgradient location for well MW-4.

Wells were installed using a CME 75 drill rig with 6-inch I.D. hollow stem auger. Soil samples were taken every 2 1/2 feet to the maximum boring depth of 20 1/2 to 26 1/2 feet below ground surface (see well logs, Appendix A). The samples were later submitted for laboratory testing, as listed on Table 1.

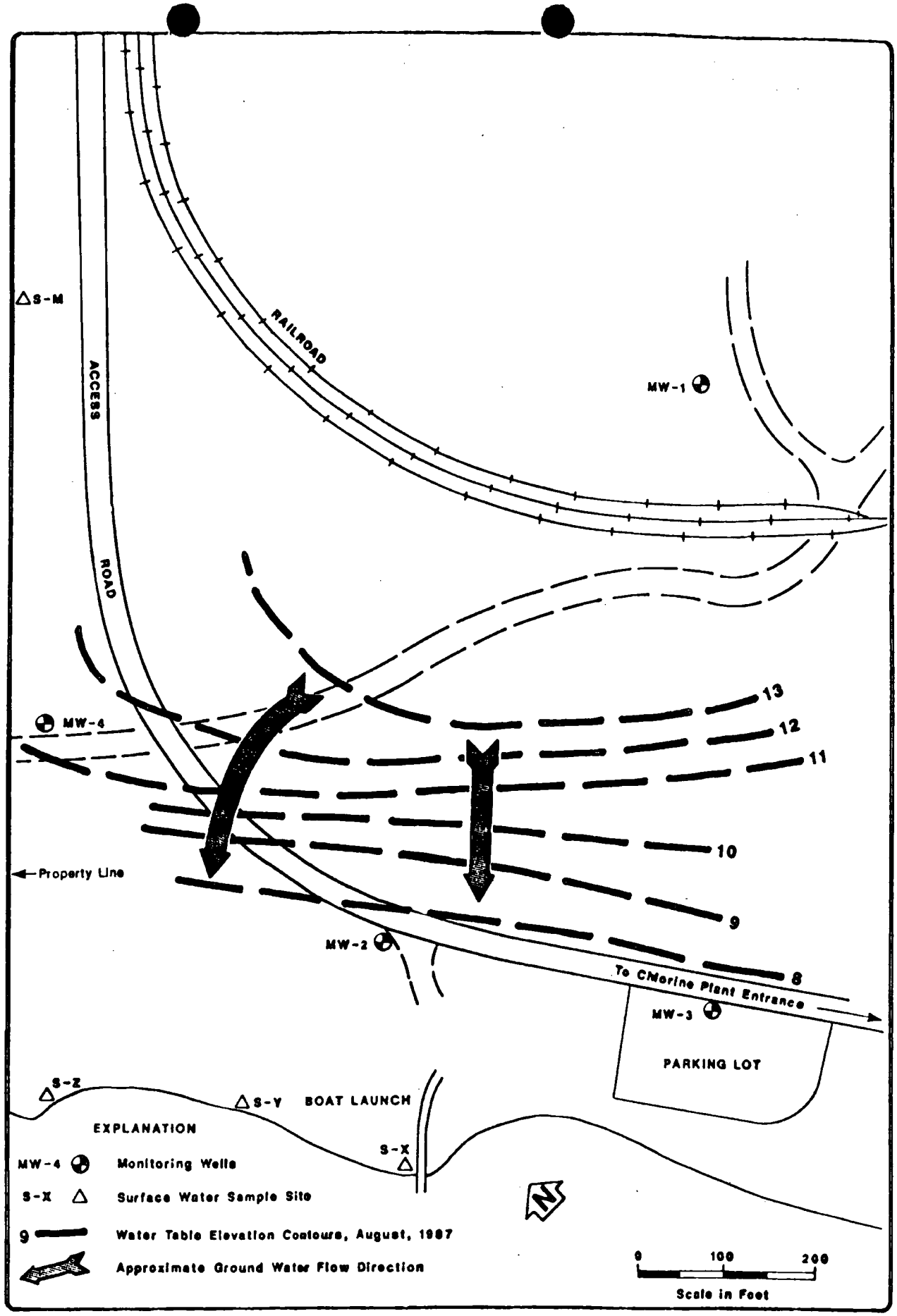
Upon completion of the boring, monitoring wells were constructed with 2-inch diameter schedule 80 PVC screen and casing (Figure 2). The screened section consists of 15 feet of factory milled PVC with 0.010-inch slots. All joints are flush threaded to avoid water quality effects from the use of solvent cements. An annular filter pack of Aqua 8 Monterey sand was installed from the bottom of the borehole to approximately 1 to 2 feet above the top of the screen. The remaining annular space around each well was filled with bentonite chips which provide an annular seal. A locked steel security casing set in a shallow concrete pad was installed over each monitoring well (see Figure 3).

Following installation, the monitoring well screens were developed by bailing and pumping to remove fine sediments and maximize hydraulic connection between the annular sand pack and the formation. Screen development continued until discharge water was essentially sediment free.

TABLE 1

SOIL SAMPLE SUMMARY

LOCATION DESIGNATION	SAMPLE DATE(S)	SAMPLE DEPTH (ft.)
MW-1	7-20-87	2.5-4
	7-20-87	5-6.5
	7-20-87	7.5-9
	7-20-87	10-11.5
	7-20-87	12.5-14
	7-20-87	15-16.5
	7-20-87	17.5-19
	7-20-87	20-21.5
MW-2	7-21-87	2.5-4
	7-21-87	5-6.5
	7-21-87	7.5-9
	7-21-87	10-11.5
	7-21-87	12.5-14
	7-21-87	15-16.5
	7-21-87	17.5-19
	7-21-87	20-21.5
MW-3	7-21-87	2.5-4
	7-21-87	5-6.5
	7-21-87	7.5-9
	7-21-87	10-11.5
	7-21-87	12.5-14
	7-21-87	15-16.5
	7-21-87	17.5-19
	7-21-87	20-21.5
MW-4	7-23-87	2.5-4
	7-23-87	5-6.5
	7-23-87	7.5-9
	7-23-87	10-11.5
	7-23-87	12.5-14
	7-23-87	15-16.5
	7-23-87	17.5-19
	7-23-87	20-21.5
	7-23-87	22.5-24
	7-23-87	25-26.5



Sweet-Edwards EMCON

WEYERHAEUSER CHLORINE PLANT

Site Map

Figure 1

DATE 10-21-87
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SINGLE COMPLETION MONITORING WELL

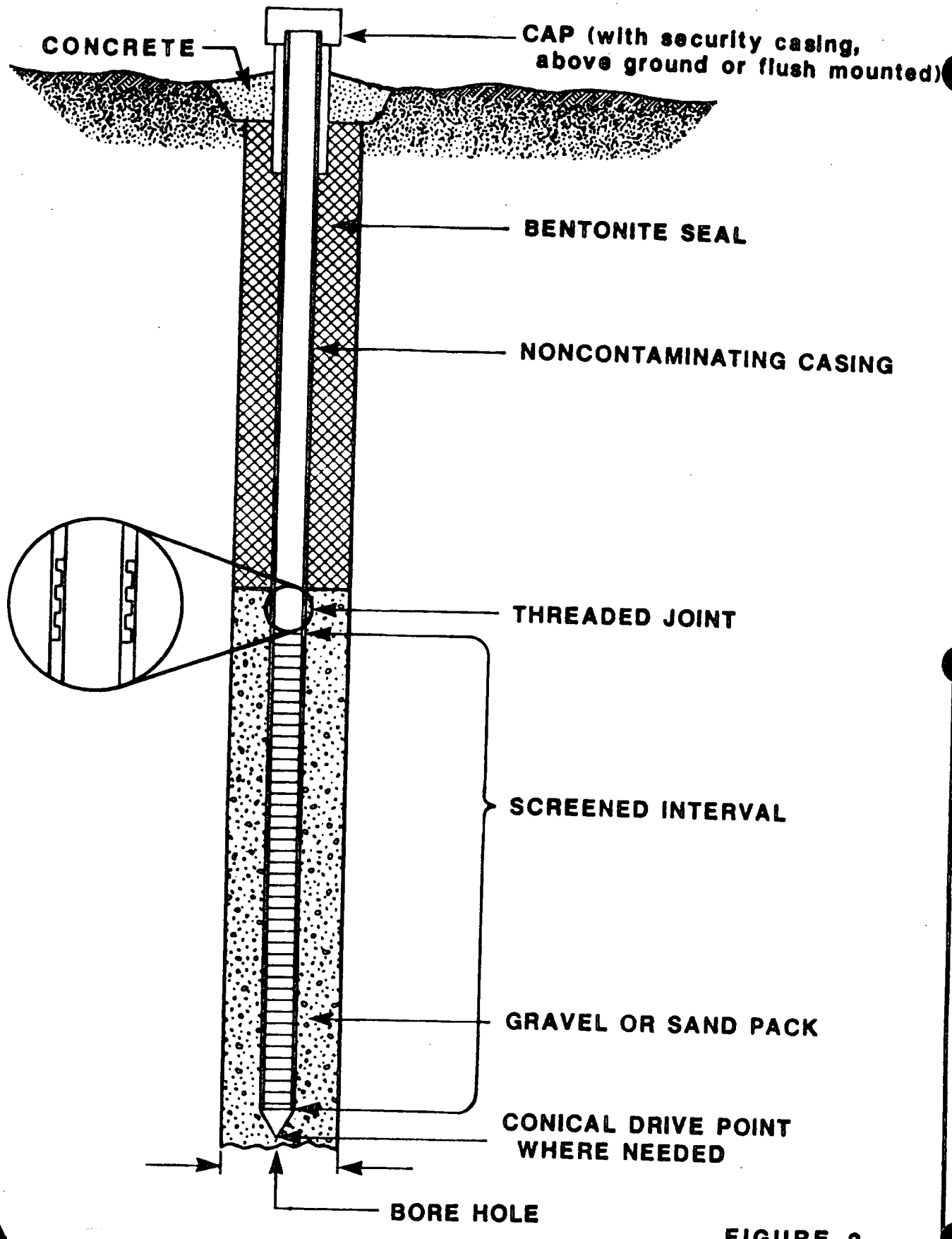


FIGURE 2

Sweet, Edwards & Associates, Inc. • P.O. Box 328 • Kelso, WA 98626

Revised Date:
2/23/87

MONITORING WELL SECURITY CASING

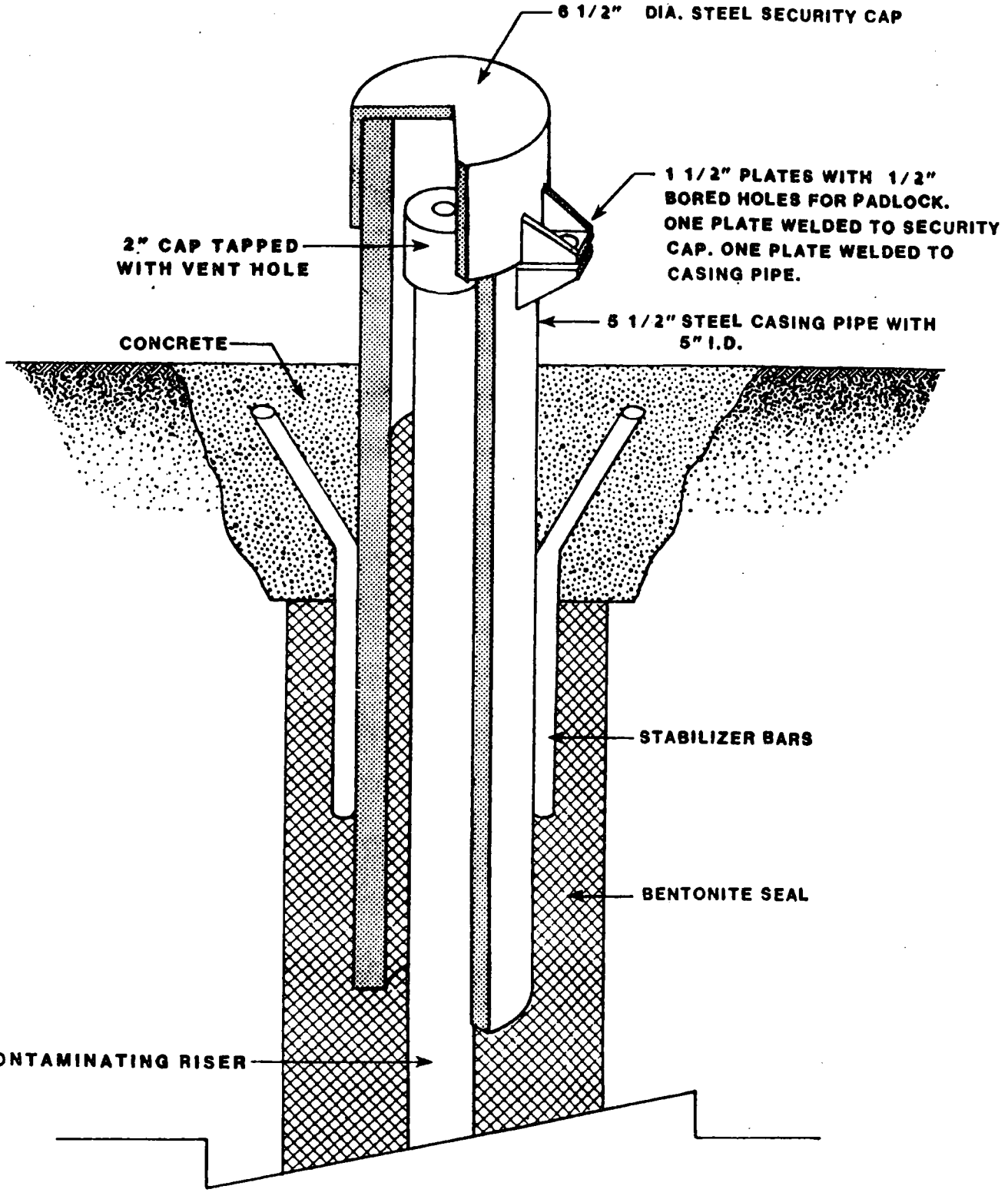


FIGURE 3

Sweet, Edwards & Associates, Inc. • P.O. Box 328 • Kelso, WA 98626

Revised Date
6/17/85

2.2 WATER QUALITY SAMPLING

2.2.1 Ground Water Sampling

The monitoring wells have been sampled eight times since the wells were completed (see Table 2). Blind duplicate samples were collected and submitted for analysis for the May 9 and July 7, 1988 sampling events. Blind quadruplicate samples were collected and submitted for the November 4, 1987 sampling event. A split sample from each monitoring well was collected and submitted to the Weyerhaeuser Analytical Laboratory for the May 9, 1988 sampling event. All other laboratory analysis have been completed by Columbia Analytical Services, Longview, Washington.

Wells are purged and sampled using a peristaltic pump connected to polyethylene tubing dedicated to each well. Samples are collected in bottles provided by the contract laboratory. Prior to initial purging water levels are measured using an electric well sounder. The wells are purged prior to sampling until a minimum of three pore volumes have been removed and field pH and/or specific conductance values have stabilized (±10%).

Beginning with the November 4, 1987 sampling event, transfer blanks (field blanks) were collected during sampling. Blanks consist of distilled water samples collected using the same equipment and decontamination procedures employed in collection of ground water samples.

The depths to water, field water quality data, decontamination and sampling procedures for each well are recorded on the Field Data Forms (see Appendix B) upon completion of sampling. All samples are delivered to the contract laboratory where custody is transferred (see Chain of Custody forms, Appendix C).

TABLE 2

WATER SAMPLING SUMMARY

LOCATIONS	SAMPLE DATES	COMMENTS
MW-1, MW-2	8-5-87	
MW-3, MW-4	9-3-87	
	11-4-87	Quadreplicate samples
	1-12-88	
	3-7-88	
	5-9-88	Duplicate samples and split sample to Weyerhaeuser Analytical Laboratory
	7-7-88	
	8-5-88	
S-X, S-Y and S-Z	9-3-87	
	5-9-88	Duplicate samples and split sample to Weyerhaeuser Analytical Laboratory
S-M	5-9-88	Duplicate samples and split sample to Weyerhaeuser Analytical Laboratory

2.2.2 Surface Water Sampling

During the September 3, 1987 and May 9, 1988 sampling event, water samples were collected from three surface water locations. These locations are designated S-X, S-Y and S-Z (see site map Figure 1). A fourth surface water location, S-M, was sampled on only May 9, 1988.

Surface water sampling site S-M is in the marsh area at the western edge of the Weyerhaeuser property. Surface water has only occasionally been observed at this location during wetter portions of the year. Samples were collected as grab samples from standing surface water.

Surface water sampling sites S-X, S-Y and S-Z are adjacent to the Columbia River. Water samples were collected from shallow hand auger borings excavated within 10 to 15 feet of the water line of the river. Four-inch diameter PVC pipe was used to temporarily stabilize the borehole wall while water samples were collected using a peristaltic pump. Water samples were collected in this manner to provide an indication of mercury concentrations in the shallow ground water system at the point of discharge to surface water. These sample locations minimize the influence on the water sample of dilution which would occur if samples were collected directly from the river. Sampling points have not been permanently established. Exact locations of the three sampling points varies between the September 3, 1987 and May 9, 1988 sample dates.

2.3 QUALITY ASSURANCE/QUALITY CONTROL

All field work was completed following requirements of Sweet-Edwards/EMCON QA/QC procedures. All drilling and soil sampling equipment was decontaminated before use at each drilling/sampling location. Drilling equipment was cleaned using a high

pressure/hot water washer. Water sampling equipment was cleaned using a non-phosphatic detergent wash followed by a methanol rinse and a deionized water rinse.

3.0 GEOLOGY AND HYDROGEOLOGY

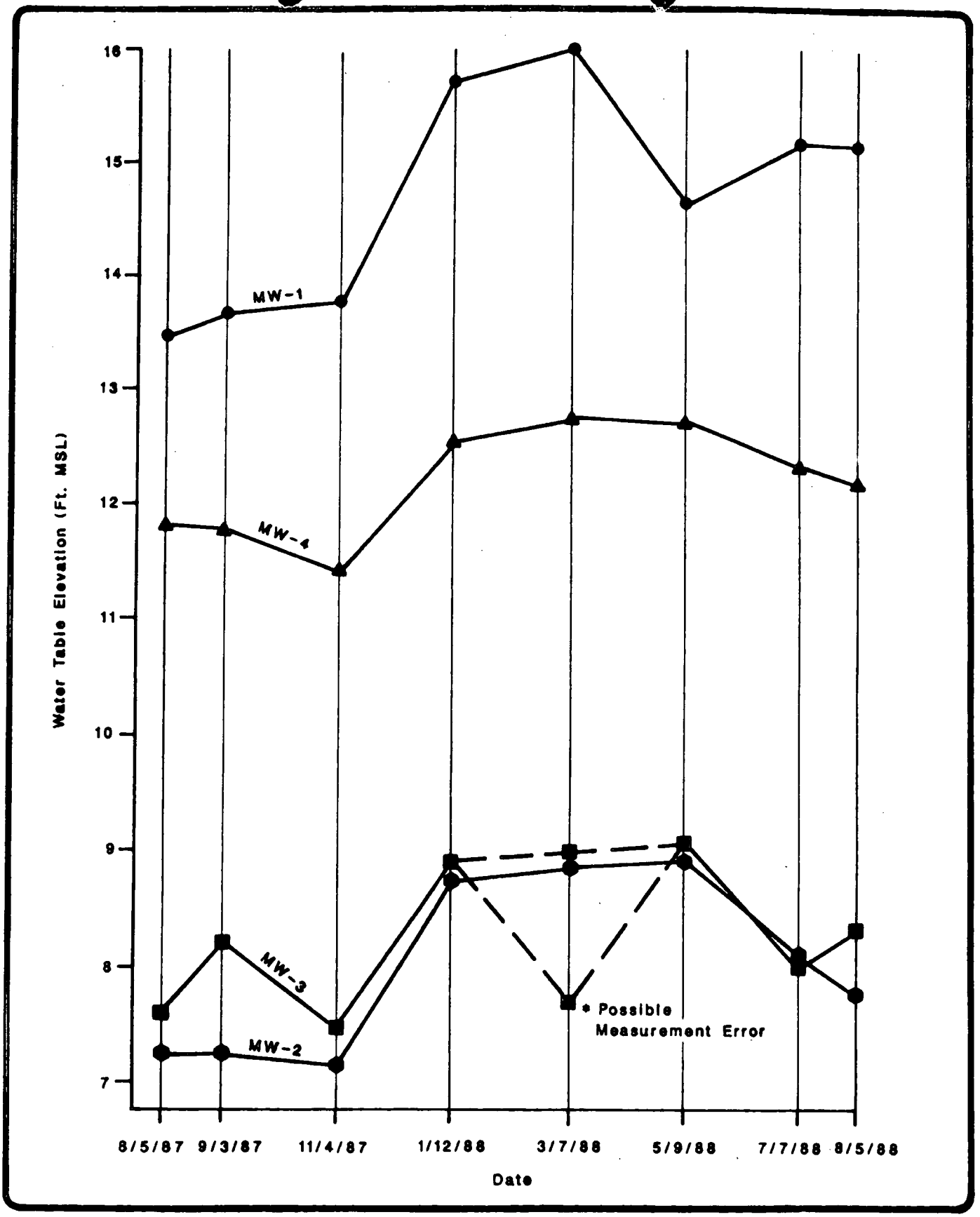
3.1 GEOLOGY

The site area is on the floodplain of the Columbia River. At the site a surficial layer of dredged sand fill overlies natural floodplain sediments. The floodplain sediments consisting of alluvial silt, sandy silt and silty sand were encountered at a depth of approximately 20 feet in monitoring well MW-4 (see well logs, Appendix A). The sediments are overlain by medium grain dredge sand fill. The remaining three monitoring wells did not fully penetrate the dredge sand fill. The sand fill at those well sites is at least 20 feet thick.

The initial well MW-3 borehole site was approximately 200 feet east of the MW-3 well site shown on Figure 1. Basalt bedrock was encountered at depths of approximately 5-1/2 feet in two borehole locations a few feet apart. A basalt knob (thought to be an erosional remnant), reportedly existed in the general area of the Chlorine Plant. This feature, variously called Coffin Mountain, Mt. Coffin, or Coffin Rock, was excavated by quarrying to provide rock fill material for the industrial area. No surface exposure of the basalt is thought to remain. The basalt encountered in the two drill holes east of monitoring well MW-3 are assumed to represent approximately the southwesterly or westerly limit of the basalt knob.

3.2 HYDROGEOLOGY

The Columbia River is the discharge area for deep regional ground water flow systems recharged in the Cascade Mountains and foothills. The regional flow system is overlain by the shallow local flow system which is recharged primarily by rainfall infiltration. The four site monitoring wells are screened in the shallow water table aquifer.



Sweet-Edwards
EMCON

WEYERHAEUSER CHLORINE PLANT
Monitoring Well Hydrographs

Figure 4

DATE 10-25-88
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REVIS.
PROJECT NO. T4101.02

4.0 LABORATORY TESTING RESULTS

All laboratory testing has been completed by Columbia Analytical Services except for split samples of ground water sent to Weyerhaeuser Analytical Laboratory, May 9, 1988.

4.1 SOIL QUALITY RESULTS

A total of 34 soil samples were collected at 2-1/2 foot intervals during construction of the monitoring wells. Samples were submitted for analysis of total mercury and EP toxicity mercury concentrations. Laboratory testing results are presented in Table 4.

Total mercury concentrations were above the detection limit (0.1 mg/kg) in 6 of the 34 samples collected. These samples were:

WELL	SAMPLE DEPTH (FT.)	MERCURY CONCENTRATION (mg/kg)
MW-2	10 - 11.5	0.46
MW-3	5 - 6.5	1.9
MW-4	5 - 6.5	0.2
MW-4	7.5- 9	0.2
MW-4	10 - 11.5	0.1
MW-4	22.5- 24	0.1

EP Toxicity mercury concentrations exceeded the detection limit of 0.0002 mg/L for 5 of the 34 samples. These samples were:

WELL	SAMPLE DEPTH (FT.)	MERCURY CONCENTRATION (mg/L)
MW-1	12.5 - 14	0.0043
MW-2	10 - 11.5	0.00021
MW-3	5 - 6.5	0.00024
MW-4	17.5 - 19	0.0005
MW-4	20 - 21.5	0.0005

None of the soil samples were found to have mercury concentrations which exceeded the 0.2 mg/L EP Toxicity limit (see Table 4). It was observed that only two soil samples (MW-2 10-

Depth to ground water in the shallow aquifer ranges from about 8 to 15 feet below ground surface at the site wells. The depth is controlled primarily by ground surface elevation, seasonal fluctuations, and to a lesser degree by river stage fluctuations.

The pattern of water table elevation contours on Figure 1 show that shallow ground water flow is southwest toward the river bank. The contour pattern generally parallels the topography, as expected with a water table aquifer. There are additional components of flow to the wetlands to the west. Due to the coarse grained dredge spoil surface soils, there is little or no surface water runoff from the site.

As indicated on the monitoring well hydrographs (Figure 4) and the hydrology data table (Table 3), seasonal ground water table elevations through the one year period of record fluctuate approximately 2 to 2-1/2 feet. Water levels were lowest when measured in August 1987 (monitoring well MW-1) and November 1987 (monitoring wells MW-2, MW-3 and MW-4). Water table elevations were highest in March 1988 (monitoring wells MW-1 and MW-4) and May 1988 (monitoring wells MW-2 and MW-3).

TABLE 3

WEYERHAEUSER - CHLORINE PLANT
HYDROLOGY DATA

MONITORING WELL	MEASURING PT. ELEVATION	DATE	DEPTH TO WATER	WATER TABLE ELEVATION
MW-1	24.48	08/06/87	11.04	13.44
		09/03/87	10.83	13.65
		11/04/87	10.73	13.75
		01/12/88	8.79	15.69
		03/07/88	8.46	16.02
		05/09/88	9.85	14.63
		07/07/88	9.29	15.19
		08/05/88	9.30	15.18
MW-2	18.00	08/06/87	10.76	7.24
		09/03/87	10.75	7.25
		11/04/87	10.86	7.14
		01/12/88	9.26	8.74
		03/07/88	9.13	8.87
		05/09/88	9.07	8.93
		07/07/88	9.91	8.09
		08/05/88	10.24	7.76
MW-3	17.84	08/06/87	10.26	7.58
		09/03/87	9.62	8.22
		11/04/87	10.38	7.46
		01/12/88	8.93	8.91
		03/07/88	10.15*	7.69*
		05/09/88	8.76	9.08
		07/07/88	9.84	8.00
		08/05/88	9.51	8.33
MW-4	26.73	08/06/87	14.92	11.81
		09/03/87	14.94	11.79
		11/04/87	15.33	11.40
		01/12/88	14.19	12.54
		03/07/88	13.96	12.77
		05/09/88	14.02	12.71
		07/07/88	14.41	12.32
		08/05/88	14.56	12.17

* NOTE: Anomalous measurements - possible measurement error

WEYCO-T3.N07 TS
S4101.02

TABLE 4

LABORATORY SOIL QUALITY DATA

EP Toxicity Standard (mg/L)				0.2
			MERCURY CONCENTRATIONS	
WELL OR SITE NO.	SAMPLE DATE	SAMPLE DEPTH(FT.)	TOTAL (mg/kg)	EPTOX (mg/L)
MW-1	07/20/87	2.5- 4	0.1 L	0.0002 L
		5.0- 6.5	0.1 L	0.0002 L
		7.5- 9	0.1 L	0.0002 L
		10.0-11.5	0.1 L	0.0002 L
		12.5-14	0.1 L	0.0043
		15.0-16.5	0.1 L	0.0002 L
		17.5-19	0.1 L	0.0002 L
		20.0-21.5	0.1 L	0.0002 L
MW-2	07/21/87	2.5-4	0.1 L	0.0002 L
		5.0-6.5	0.1 L	0.0002 L
		7.5-9	0.1 L	0.0002 L
		10.0-11.5	0.46	0.00021
		12.5-14	0.1 L	0.0002 L
		15.0-16.5	0.1 L	0.0002 L
		17.5-19	0.1 L	0.0002 L
		20.0-21.5	0.1 L	0.0002 L
MW-3	07/21/87	2.5-4	0.1 L	0.0002 L
		5.0-6.5	1.9	0.00024
		7.5-9	0.1 L	0.0002 L
		10.0-11.5	0.1 L	0.0002 L
		12.5-14	0.1 L	0.0002 L
		15.0-16.5	0.1 L	0.0002 L
		17.5-19	0.1 L	0.0002 L
		20.0-21.5	0.1 L	0.0002 L
MW-4	07/23/87	2.5-4	0.1 L	0.0002 L
		5.0-6.5	0.2	0.0002 L
		7.5-9	0.2	0.0002 L
		10.0-11.5	0.1	0.0002 L
		12.5-14	0.1 L	0.0002 L
		15.0-16.5	0.1 L	0.0002 L
		17.5-19	0.1 L	0.0005
		20.0-21.5	0.1 L	0.0005
		22.5-24	0.1	0.0002 L
		25.0-26.5	0.1 L	0.0002 L
S-X	09/03/87	4-5	0.2 L	---
S-Y	09/03/87	4-5	0.2 L	---
S-Z	09/03/87	4-5	0.2 L	0.0005 L

NOTES: MW = Monitoring Well
L = Less Than

11.5 feet, and MW-3 5-6.5 feet) had mercury concentrations above the detection limits for both total and EP Toxicity analysis.

As indicated above, the highest total mercury concentrations were found in soil samples from monitoring wells MW-2 and MW-3 in the 10 to 11.5 and 5 to 6.5 foot samples, respectively. Four of the ten soil samples from MW-4 contained total mercury concentrations at or slightly above the 0.1 mg/kg detection limit. It is not known why the higher concentrations at only one depth were found in MW-2 and MW-3.

Soil/sediment samples were also collected from depths of 3 to 5 feet at sample locations S-X, S-Y and S-Z. Total mercury concentrations in all three samples was below the detection limit of 0.2 mg/kg. An EP Toxicity analysis was completed for sample S-Z. The EP Toxicity mercury concentration was below the 0.0005 mg/L detection limit.

4.2 WATER QUALITY RESULTS

As previously discussed, water samples were collected on eight separate dates over a one year period. Laboratory detection limits varied for different sample dates and different wells due to the wide range in sodium chloride (NaCl) concentrations and the resulting specific conductance values (see Table 5).

The mercury concentrations exceeded the laboratory detection limit for all four monitoring wells on at least one occasion. Mercury concentrations exceeded the Primary Drinking Water Maximum Contaminant Level (MCL) on two sample dates for monitoring well MW-3 (8/5/87 and 1/12/88) and all sample dates for monitoring well MW-4 (see Water Quality Data, Table 5). The split sample sent to the Weyerhaeuser Analytical Laboratory for surface water sample site S-X was the only surface water sample which was found to have mercury at or above the detection limit.

TABLE 5
WEYERHAEUSER PAPER COMPANY
LONGVIEW CHLORINE PLANT
WATER QUALITY DATA

LOCATION	SAMPLE DATE		Hg (mg/L)	Hg AVERAGE for sample date	FIELD pH	FIELD COND. (umhos/cm)	LAB pH	LAB COND. (umhos/cm)
MCL			0.002					
Secondary Std.					6.5-8.5		6.5-8.5	
MW-1	08/05/87		0.0002 L		—	988	—	—
	09/03/87		0.0005 L		7.34	1,300	—	—
	11/04/87		0.0002 L		7.31	881	—	—
	11/04/87		0.0002 L		7.31	881	—	—
	11/04/87		0.0002 L	0.0002 L	7.31	881	—	—
	11/04/87		0.0002 L		7.31	881	—	—
	01/12/88		0.0005		7.05	441	7.1	740
	03/07/88		0.0008 L		—	—	6.7	890
	05/09/88		0.0002 L		6.88	542	7.0	720
	05/09/88	duplicate	0.0002 L	0.0002 L	6.88	542	6.9	750
	05/09/88	split-WAL	0.0002 L		—	—	—	—
	07/07/88		0.001 L	0.0006 L	6.24	963	7.0	874
	07/07/88	duplicate	0.0002 L		—	—	—	—
	08/05/88		0.0002 L	0.0002 L	5.92	934	8.7	876
	08/05/88	duplicate	0.0002 L		—	—	—	—
MW-2	08/05/87		0.0002 L		—	—	—	—
	09/03/87		0.0005 L		6.62	—	—	—
	11/04/87		0.0002 L		6.37	**	—	—
	11/04/87		0.0002 L		6.37	**	—	—
	11/04/87		0.0002 L	0.0002 L	6.37	**	—	—
	11/04/87		0.0002		6.37	**	—	—
	01/12/88		0.002		6.85	**	6.4	63,000
	03/07/88		0.0008 L		—	—	6.3	49,000
	05/09/88		0.0008 L		6.74	25,000	6.5	38,440
	05/09/88	duplicate	0.0008 L	0.0006 L	6.74	25,000	6.4	37,060
	05/09/88	split-WAL	0.0003 L		—	—	—	—
	07/07/88		0.001 L	0.0006 L	6.97	39,800	6.6	34,900
	07/07/88	duplicate	0.0002 L		—	—	—	—
	08/05/88		0.0002 L	0.0002 L	7.06	41,800	7.6	39,000
	08/05/88	duplicate	0.0002 L		—	—	—	—

TABLE 5, CONTINUED

LOCATION	SAMPLE DATE		Hg (mg/L)	Hg AVERAGE	FIELD pH	FIELD COND. (umhos/cm)	LAB pH	FIELD COND. (umhos/cm)
MW-3	08/05/87		0.004 E		—	—	—	—
	09/03/87		0.0005 L		6.86	—	—	—
	11/04/87		0.0002 L		5.56	13,670*	—	—
	11/04/87		0.0002 L		5.56	13,670*	—	—
	11/04/87		0.0002 L	0.0002 L	5.56	13,670*	—	—
	11/04/87		0.0002 L		5.56	13,670*	—	—
	01/12/88		0.003 E		5.30	**	6.2	283,800
	03/07/88		0.0008 L		—	—	5.2	474,000
	05/09/88		0.0008 L		6.39	186,300	6.9	448,000
	05/09/88	duplicate	0.0008 L	0.0007 L	6.39	186,300	6.8	492,000
	05/09/88	split-WAL	0.0005 L		—	—	—	—
	07/07/88		0.001 L	0.001 L	7.16	**	6.7	398,000
	07/07/88	duplicate	0.001 L		—	—	—	—
	08/05/88		0.0009 L	0.0009 L	7.15	**	7.7	576,000
	08/05/88	duplicate	0.0009 L		—	—	—	—
MW-4	08/05/87		0.039 E		—	—	—	—
	09/03/87		0.033 E		11.35	15,200	—	—
	11/04/87		0.027 E		11.50	*	—	—
	11/04/87		0.031 E		11.50	*	—	—
	11/04/87		0.025 E	0.028 E	11.50	*	—	—
	11/04/87		0.030 E		11.50	*	—	—
	01/12/88		0.012 E		10.6	2,300	10.2	3,638
	03/07/88		0.012 E		—	—	10.7	7,320
	05/09/88		0.0026 E		9.62	4,600	9.3	3,200
	05/09/88	duplicate	0.0026 E	0.0024 E	9.62	4,600	9.3	3,200
	05/09/88	split-WAL	0.0020 E		—	—	—	—
	07/07/88		0.004 E	0.005 E	7.71	5,830	9.3	3,984
	07/07/88	duplicate	0.006 E		—	—	—	—
	08/05/88		0.018 E	0.020 E	7.12	9,500	10.4	11,500
	08/05/88	duplicate	0.021 E		—	—	—	—
S-X	09/03/87		0.005 L		6.5	206	—	—
	05/09/88		0.0002 L		6.32	359	6.9	204
	05/09/88	duplicate	0.0002 L	0.0002 L	6.32	359	6.9	208
	05/09/88	split-WAL	0.0002		—	—	—	—

TABLE 5, CONTINUED

LOCATION	SAMPLE DATE		Hg (mg/L)	Hg AVERAGE	FIELD pH	FIELD COND. (umhos/cm)	LAB pH	FIELD COND. (umhos/cm)
S-Y	09/03/87		0.005 L		6.4	169	—	—
	05/09/88		0.0002 L		6.94	164	8.0	202
	05/09/88	duplicate	0.0002 L	0.0002 L	6.94	164	7.8	204
	05/09/88	split-WAL	0.0002 L		—	—	—	—
S-Z	09/03/87		0.005 L		6.5	177	—	—
	05/09/88		0.0002 L		7.17	219	8.4	228
	05/09/88	duplicate	0.0002 L	0.0002 L	7.17	219	8.0	224
	05/09/88	split-WAL	0.0002 L		—	—	—	—
S-M	05/09/88		0.0002 L		7.75	783	7.9	852
	05/09/88	duplicate	0.0002 L	0.0002 L	7.75	783	7.8	830
	05/09/88	split-WAL	0.0002 L		—	—	—	—
TRANSFER	11/04/87		0.0004		—	—	—	—
BLANK	01/12/88		0.0009		—	—	5.5	5
	03/07/88		0.0008 L		—	—	7.5	4.9
	05/09/88		0.0002 L		—	—	7.7	3
	05/09/88		0.0002 L	0.0002 L	—	—	7.6	2
	05/09/88	split-WAL	0.0002 L		—	—	—	—
	07/07/88		0.0002 L		—	—	6.8	4
	08/05/88		0.0002 L		—	—	6.9	54

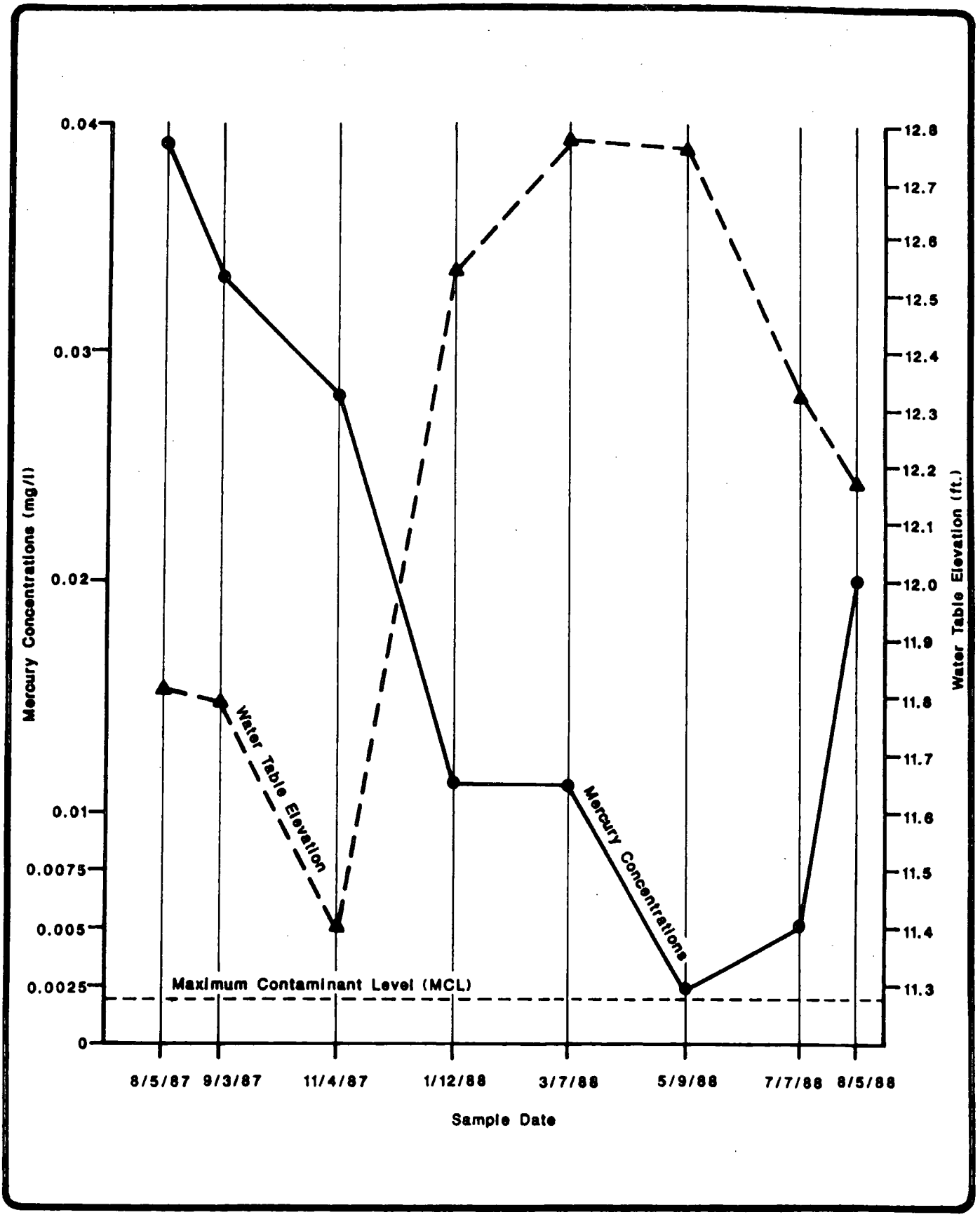
KEY TO SYMBOLS:
MW = Monitoring Well
MCL = Primary Drinking Water Maximum Contaminant Level
Secondary Standard = Secondary Drinking Water Standard
* = Probable meter malfunction
** = Conductivity values appear to have exceeded the instrument limit.
S-X - S-Z = Shallow Ground Water Sample Adjacent to River
S-M = Surface Site (Marsh)
L = Less Than
E = Exceeds Maximum Contaminant Level
WAL = Weyerhaueser Analytical Laboratory

Transfer/field blank mercury concentrations of 0.0004 and 0.0009 mg/L exceeded the detection limit for samples collected November 4, 1987 and January 12, 1988, respectively. It is believed that this is most likely due to mercury contamination in the commercially purchased distilled water, although field or laboratory contamination are possible. Samples from three of the monitoring wells (MW-1, MW-2, and MW-3) had mercury concentrations below the 0.0002 mg/L detection limit for the November 4, 1987 sampling date. Ground water samples collected on this date were apparently unaffected by the source or cause of mercury found in the blank.

Mercury concentrations in ground water samples collected from all wells during the January 12, 1988 sampling event were above detection limits. This was the only date for monitoring wells MW-1 and MW-2 and one of two dates for monitoring well MW-3 for which mercury concentrations above detection limits were reported. It is possible that ground water samples were impacted by the distilled water or the same source/cause of mercury in the distilled water.

Mercury concentrations in water samples from monitoring well MW-4 ranged from 0.002 mg/L (5/9/88 - Weyerhaeuser Analytical Laboratory Split Sample) to 0.039 mg/L (8/5/87 sample). The overall well MW-4 average mercury concentration is 0.019 mg/L, approximately 10 times the MCL limit of 0.002 mg/L.

As indicated on the graph of mercury concentrations versus water table elevations in monitoring well MW-4 (see Figure 5) there is an apparent inverse relationship indicated. Increases in the water table elevation appears to roughly correspond to decreases in the mercury concentration. This is likely due to increased dilution and/or increased ground water flow rates resulting from



Sweet-Edwards
EMCON

WEYERHAEUSER CHLORINE PLANT
Mercury Concentration/Water Table Elevation Monitoring Well MW-4

Figure 5

DATE 10-25-89
DWN. mmm
APPR.
REVIS.
PROJECT NO. 14101.02

increased incident precipitative recharge to the shallow ground water system.

It is apparent that ground water quality, at least in the area of monitoring well MW-4 has been impacted by past activity at the site. No projection of the lateral extent of ground water with elevated mercury concentrations is possible with the available data.

APPENDIX A

WELL LOGS

APPENDIX A

MONITORING WELL LOGS

Sweet, Edwards & Associates, Inc.

BORING LOG

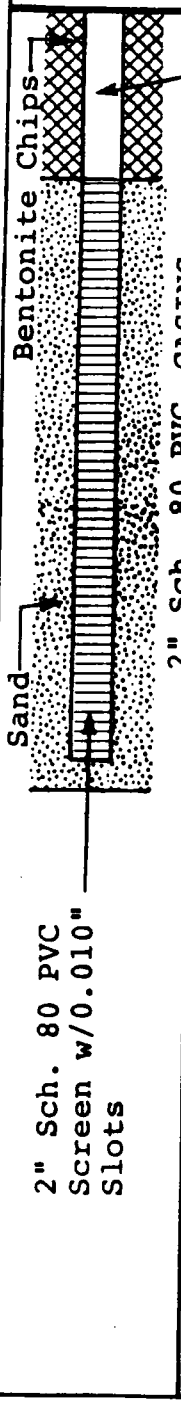
PROJECT WEYERHAEUSER-CHLORINE PLANT

Location SEE MAP **Boring No.** MW-1

Surface Elevation 24.48 Top of Casing **Drilling Method** Hollow Stem Auger

Total Depth 21.5 feet **Drilled By** Mountain States Drilling

Date Completed 7-20-87 **Logged By** C. Wells

WELL DETAILS	PENE-TRATION TIME/ RATE	DEPTH (FEET)	SAMPLE NO.	SAMPLE TYPE	PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
		0					0-20' SAND, gray, medium grained, poorly graded, loose, trace silt, occasional fine sand zones, saturated below ~10 feet. (FILL).	
			1	SSP				
		5	2	"				
			3	"				
		10	4	"				
			5	"		SP		
		15	6	"				
			7	"				
		20	8	"				
		25						

Sweet, Edwards & Associates, Inc.

BORING LOG

PROJECT WEYERHAEUSER-CHLORINE PLANT

Location See map.

Boring No. MW-2

Surface Elevation 18.00 Top of Casing

Drilling Method Hollow Stem Auger

Total Depth 21.5 FEET

Drilled By Mountain States Drilling

Date Completed 7-21-87

Logged By C. Wells

WELL DETAILS	PENE-TRATION TIME/ RATE	DEPTH (FEET)	SAMPLE NO.	SAMPLE TYPE	PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
Bentonite, Casing, Sand, 2" Sch. 80 PVC Screen w/0.010" Slots		0				SP	0-9.5' SAND, gray-brown, poorly graded, loose, damp, (FILL).	
			1	SSP				
		5	2	"				
			3	"				
	▽	10	4	"		SP-ML	9.5-14.5' INTERBEDDED SAND and SILT, dark gray, slightly to moderately cohesive, nonplastic, many organics, saturated.	
			5	"				
		15	6	"		SP	14.5-20.5' SAND, dark gray, fine to medium grained, poorly graded, saturated.	
			7	"				
		20	8	"				
		25						

Sweet, Edwards & Associates, Inc.

BORING LOG

PROJECT WEYERHAEUSER-CHLORINE PLANT

Location See Map **Boring No.** MW-3

Surface Elevation 17.84 Top of Casing **Drilling Method** Hollow Stem Auger

Total Depth 21.5 FEET **Drilled By** Mountain States Drilling

Date Completed 7-21-87 **Logged By** C. Wells

WELL DETAILS	PENE-TRATION TIME/ RATE	DEPTH (FEET)	SAMPLE NO.	SAMPLE TYPE	PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
Bentonite, Casing, Sand, 2" Sch. 80 PVC Screen w/0.010" Slots		0	1	SSP		SP	0-4.5' SAND, brown, medium grained, poorly graded, loose, damp, (FILL).	
		5	2	"		SP-OL	4.5-7' FINE SANDY SILT, black, organic, slightly cohesive, moist (Clarifier Sludge).	
	▽	10	3	"		SW	7-17' SAND, gray-dark gray, medium grained, poorly to well graded, loose, some gravels and organic material 10-12 feet, saturated below ~10 feet.	
		15	4	"				
			5	"				
			6	"				
		20	7	"		SP	17-21.5' SAND, dark gray, fine grained, poorly graded, saturated.	
			8	"				
		25						

SEA-300-02a

Sweet, Edwards & Associates, Inc.

BORING LOG

PROJECT WEYERHAEUSER-CHLORINE PLANT — **Page** 1 of 1

Location See Map. — **Boring No.** MW-4

Surface Elevation 26.73 Top of Casing — **Drilling Method** Hollow Stem Auger

Total Depth 26.5 feet — **Drilled By** Mountain States Drilling

Date Completed 7-23-87 — **Logged By** C. Wells

WELL DETAILS	PENETRATION TIME/ RATE	DEPTH (FEET)	SAMPLE NO.	SAMPLE TYPE	PERMEABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
Bentonite, Casing, Sand, 2" Sch. 80 PVC Screen w/0.010" Slots		0	1	SSP		SP	0-9.5' SAND, brown-gray brown, medium grained, poorly graded, moist, (FILL).	
		5	2	"				
			3	"				
		10	4	"		SW	9.5-12' SAND, gray brown, medium to coarse grained, well graded, loose, damp.	
	▽		5	"		SP	12-20.5' SAND, gray brown, gray, medium grained, poorly graded, saturated below 15 feet.	
		15	6	"				
			7	"				
		20	8	"		SP-ML	20.5-24' SANDY SILT, SILTY SAND, very dark gray, black, slightly to moderately cohesive, some organic material, saturated, (strong petroleum odor?).	
			9	"		ML		
		25	10	"			24-26.5' SILT, gray, moderately cohesive, trace sand.	
		30						

SEA-300-02a

APPENDIX B

FIELD DATA FORMS

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS: WEYHAUSER - CLOQUINE / INTERIOR
PROJECT NAME: _____ #: _____
CLIENT/CONTACT: _____

Well or Surface Site Number: MW-1
Sample Designation: _____
Date, Time: 11:56 AM 8-5-87
Weather: OVERCAST

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
26	16	Peristaltic	Sample	8-5 1220

Surface Water Flow Speed: _____ Measurement Method: _____ Date, Time: _____

SAMPLING: 2 of each bottle

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)
MW-1	8-5 1220	PERISTALTIC	500	Poly	19'	yes		YES✓
"	" "	"	1000	Poly	19	no		✓
"	" "	"	500	Glass	19'	no		✓
"	" "	"	200	Poly	19'	no		✓
"	" "	"	500					✓
"	" "	"						✓

Sampler Cleaning Method: Non-Phosphatic detergent wash, H2O rinse, MeOH rinse, Distilled H2O rinse

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				
16	-	988 uhos						

NOTES:

Total # of Bottles: 10

Signature: _____

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS WEYERHAEUSER CLORINE / INTERIOR
PROJECT NAME _____ # _____
CLIENT/CONTACT _____

Well or Surface Site Number MW-2
Sample Designation MW-2
Date, Time 8-5-87
Weather OVERCAST

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
36	22.5	PERISTALTIC	SAMPLE	8-5 13:30

Surface Water Flow Speed _____ Measurement Method _____ Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
MW-2	8-5 13:30	PERISTALTIC	500	POLY	19'	YES		YES	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
"	"	"	1000	POLY	19'	NO		"	
"	"	"	500	GLASS	19'	NO		"	
"	"	"	200	POLY	19'	NO		"	
"	"	"	500		19'	NO		"	
"	"	"	"			NO		"	

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				

NOTES:

CONDUCTIVITY METER IS NOT OPERATING

Total # of Bottles: 10 Signature: _____

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS WEYERHAEUSER CLEARING INTERIOR
PROJECT NAME _____ #_____
CLIENT/CONTACT _____

Well or Surface Site Number _____
Sample Designation MW-3
Date, Time 8-5-87 15:30
Weather OVERCAST

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
12	7.5	PERISTALTIC	SAMPLE	8-5-87-15:30

Surface Water Flow Speed _____ Measurement Method _____ Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
MW-3	8-5-87 15:30	PERISTALTIC	500	POLY	19'	YES		YES	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
"	8-5-87 "	"	1000	POLY	"	NO		"	
"	" "	"	500	GLASS	"	NO		"	
"	" "	"	200	POLY	"	NO		"	
"	" "	"	500	"	"	NO		"	
"	" "	"	"	"	1	NO			

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				

NOTES:
CONDUCTIVITY METER NOT WORKING
ORANGE DOT BOTTLES FIELD FILTERED

Total # of Bottles: 10 Signature: _____

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS WEYERHAUSER CLORINE / INTERLOX
PROJECT NAME _____ #_____
CLIENT/CONTACT _____

Well or Surface Site Number _____
Sample Designation MW-4
Date, Time 8-5-87
Weather _____

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
28.25	19.53	PARISTALTIC	SAMPLE	8-5-87 - 1430

Surface Water Flow Speed _____ Measurement Method _____ Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
MW-4	8-5-87 - 1430	PERISTALTIC	500	POLY	19	YES		YES	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
"	"	"	1000	POLY	"	NO		"	
"	"	"	500	GLASS	"	"		"	
"	"	"	200	POLY	"	"		"	
"	"	"	500		"	"		"	
"	"	"	"		"	"		"	

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				

NOTES:

CONDUCTIVITY METER NOT WORKING

ORANGE DOT BOTTLES WERE FIELD FILTERED

Total # of Bottles: 10

Signature: _____

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS _____
PROJECT NAME Weyco Interox # 54106.01
CLIENT/CONTACT Ken Johnson

Well or Surface Site Number MW.1
Sample Designation WI-9-3-C
Date, Time 9-3-87 1430
Weather Sunny

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
10.83 ft (stick up) Casing		9-3-87 1430	electric sounder

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
4.0	3	peristaltic pump		9/3/87 1430-1445

Surface Water Flow Speed _____ Measurement Method _____ Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)
	9/3/87	peristaltic	500	poly	15'	N	—	Y
		pump	1000	poly	5	N	NaOH	
			250	poly		N		

Sampler Cleaning Method: Non-Phosphatic detergent wash, H2O rinse, MeOH rinse, Distilled H2O rinse

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh
2	7.92	2,200	15.2 °C	
3	7.34	1,300	15.7	

NOTES:

pore vol. = 1.3 gal
water color = clear

Filter "metals" sample in lab

Total # of Bottles: 3 Signature: SE Henshaw

Sweet, Edwards & Associates, Inc.

Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS _____
PROJECT NAME Weyco Interox # 54106.01
CLIENT CONTACT Ken Johnson

Well or Surface Site Number MW-2
Sample Designation WI-9-3-B
Date, Time 9/3/87 1401
Weather Sunny

HYDROLOGY MEASUREMENTS: 10.75 below top of casing

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
		9/3/87 1401	electric sounder

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
4.5	3	peristaltic pump		9/3/87 1401 - 1420

Surface Water Flow Speed _____ Measurement Method _____ Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
	9/3/87 1420	peristaltic pump	500	poly	18	Y/N	HNO_3	Y	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
			1000	poly		N	NaOH		
			250	poly		N	—		

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh					
2	8.25	—	15.1						
3	6.62		15.2						

NOTES:

pore vol. = 1.5 gal
Water color = clear
Water odor = slight
Cond. too high to read with meter
Filter "metals" sample in lab

Total # of Bottles: 3

Signature: [signature]

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS
PROJECT NAME Wayco INTEROX #S4106.01
CLIENT CONTACT KEN JOHNSON

Well or Surface Site Number MW-3
Sample Designation IJI-9-3-D
Date, Time 9-3-87
Weather SUNNY

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
9.62 feet below casing		9/3/87	electric sounder

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
7.5	5	peristaltic pump		9-3-87 1450-1520

Surface Water Flow Speed _____ Measurement Method _____ Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
	9-3-87	peristaltic pump	500	poly	16	N	—		Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
			1000	poly		N	NaOH		
			250	poly		N	—		

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh
3	6.86	∞	22.3 °C	

NOTES:

pore vol. = 1.5 gal
water color - clear
cond too high to measure accurately
Filter "metals" sample in lab

Total # of Bottles: 3 Signature: [signature]

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS _____
PROJECT NAME Weyco INTERBAY # 54106.01
CLIENT/CONTACT Ken Johnson

Well or Surface Site Number MW-4
Sample Designation WI-9-2-A
Date, Time 1058 9/3/87
Weather SUNNY

HYDROLOGY MEASUREMENTS: 14.94' below top of CASING

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
		9/3/87 1056	electric sounder

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
18	23			9-3-87 1100 - 1222

Surface Water Flow Speed _____ Measurement Method _____ Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
	9-3-87	peristaltic	500	poly	18'	Y	HNO_3		Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
		pump	1000	poly		N	NaOH		
			250	poly		N	—		

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp °C	Eh
2	10.52	16300		
23	11.35	15200	15.0	

NOTES:

pore vol. = 1.3 gal
water color - dark brown
water odor - H_2S
Filter metals sample in lab.

Total # of Bottles: 3

Signature: _____

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS WEYERHAEUSER / LONGVIEW
PROJECT NAME WEYERHAEUSER / CLORINE # 541 01.02
CLIENT/CONTACT

Well or Surface Site Number NEAR PLANT MW-1
Sample Designation MW-1 11-4-87
Date, Time 11-4-87
Weather

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
10.73		11-4 87 0904	M-SCOPE

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
45	3	PUMP	—	11-4-87

Surface Water Flow Speed _____, Measurement Method _____, Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
-			250					YES	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
A	↓	↓	↓	↓	↓	↓	↓	↓	↓
2									
C									

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh
-	7.20	888	14.3	
-	7.27	858	14.2	
-	7.31	881	14.1	

NOTES:

1.5 GAL / PV

DEDICATED TUBING

Total # of Bottles: 4

Signature:

SEA-400-01

Sweet, Edwards & Associates, Inc.

Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS: Weyerhaeuser / Longview Plant
PROJECT NAME: Weyerhaeuser/Chlorine Plant # 541.01.02
CLIENT CONTACT:

Well or Surface Site Number: MW-2
Sample Designation: M-3 /11-4-87
Date, Time: 11-4-87
Weather: Overcast

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
10.86			

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time

Surface Water Flow Speed ________ Measurement Method ________ Date, Time ________

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
M-3 A	12:34				~15'		—		Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
B	1235				↓		—	↓	
C	1236				↓		—	↓	
E	1237				↓		—	↓	

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				
1	6.20	5520	13.8					
2	6.34	5500	14.3					
3	6.37	5485	14.2					

NOTES:

ACCURACY OF HYDROLOGY MEASUREMENT IS SUSPECT –
HIGH SALINITY CAUSES M-SCOPE MA...
1 LARGE FILTER
DEDICATED TUBING

Total # of Bottles: 4

Signature: [signature]

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS [illegible]
PROJECT NAME WEYERHAUSER / CHLORINE # 541.01.02
CLIENT/CONTACT

Well or Surface Site Number MW-3
Sample Designation M-11
Date, Time 11-4-87
Weather OVERCAST

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
10.38		11-4 11:30	M SCOPE

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
≈ 6	3	PUMP		11-4-87

Surface Water Flow Speed ______ Measurement Method ______ Date, Time ______

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)
M-11 F	11-4 12:50	Pump	[illegible]	[illegible]		[illegible]		
B	12:52							
C	12:55							
E	[illegible]							

Sampler Cleaning Method
Non-Phosphatic detergent wash
H2O rinse
MeOH rinse
Distilled H2O rinse

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp °C	Eh
	5.47	13,800	19.7	
	5.53	13,760	19.9	
	5.56	13,670	19.8	

NOTES:

1.9 GALS / P.V
DEDICATED TUBING

Total # of Bottles: 4

Signature: [signature]

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS WEYERHAUSER / LONGVIEW
PROJECT NAME WEYERHAUSER CHLORINE # 541.01.02
CLIENT CONTACT

Well or Surface Site Number MW-4
Sample Designation M-2
Date, Time 11-4-87
Weather

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
15.38		11-4-87	M-SCOPE

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
4	= 4			11-4-87

Surface Water Flow Speed _____ Measurement Method _____ Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
M-2A		P PUMP	250	POLY	61				Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
5					↓				
C									
L					↓				

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				
	11.50	→	13.9	→	OFF SCALE			

NOTES:

1 25 GAL/PV

PH & CONDUCTIVITY OFF SCALE LAB WILL CONDUCT FIELD TESTS

DEDICATED TUBING

Total # of Bottles: 4 Signature

SEA-400-01

Sweet, Edwards & Associates, Inc.

Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS IWPV

PROJECT NAME WEYERHAEUSER / CLORINE # 541.01.02

CLIENT/CONTACT

Well or Surface Site Number TRANSFER BLANK

Sample Designation F-5

Date, Time 11-4-87

Weather

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time

Surface Water Flow Speed ______, Measurement Method ______, Date, Time ______

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)
MS A	11-4 1305	P'PUMP	250	POLY		YES	—	YES

Sampler Cleaning Method
Non-Phosphatic detergent wash
H2O rinse
MeOH rinse
Distilled H2O rinse

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				

NOTES:

TRANSFER BLANK USING DISTILLED WATER PURCHASED
AT FRAN-N-SHOP / KELSO 11-4-87

Total # of Bottles: 1

Signature: [illegible]

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS WAYECO CLEANING
PROJECT NAME _____ #_____
CLIENT/CONTACT _____

Well or Surface Site Number MW-1
Sample Designation MW-1 MW-1 MW-2
Date, Time 1-12-88
Weather OVERCAST

HYDROLOGY MEASUREMENTS:

	(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
10-1.2	8.79		10:30 1-12	M SCOPE

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
[illegible]	[illegible]	PERISTALTIC HIGH [illegible]		1-12 [illegible]

Surface Water Flow Speed _____ Measurement Method _____ Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
MW-1	1-12 [illegible]	P PUMP	500	POLY		YES	HNO3	YES	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
MW-2	[illegible]								

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp.	Eh
1	6.56	495	11 °C	
	6.90	1155	[illegible]	
	7.95	441		

NOTES:

1.5 GAL/1A PRECIPITATE TURBID

Total # of Bottles: _____ Signature: _____

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS WATER CLORINE PLANT
PROJECT NAME _____ #_____
CLIENT/CONTACT _____

Well or Surface Site Number [redacted] MW-2
Sample Designation MW4 W-1/W-2
Date, Time 1-12-88
Weather OVERCAST

HYDROLOGY MEASUREMENTS:

	(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
10-74	9.26		1-12-88 12:30	M SCOPE

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
		PUMP	SEA EDWD	

Surface Water Flow Speed _____ Measurement Method _____ Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
MW-4/W-1	13:03 1-12-88	PUMP	500	ALY		Yes	HNO3	Yes	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
MW-4/W-2	13:05 1-12-88	"	"	"		Yes	H2O	Yes	

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp. C	Eh				
1	6.57	OFF SCALE	12.7					
2	6.71	"	12.5					
3	6		12.4					

NOTES:

1.6 GAL PV

Total # of Bottles: _____ Signature: _____

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS WEYERHAUSER CLOQUATO
PROJECT NAME _____ #_____
CLIENT/CONTACT _____

Well or Surface Site Number MW 3
Sample Designation MW-5 / W-1 W-2
Date, Time 1-12-88
Weather overcast

HYDROLOGY MEASUREMENTS:

	(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
57293	8.93		1-12-88 13:30	M SCOPE

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
~	23	PUMP	SAMPLE	1-12-88

Surface Water Flow Speed _____ Measurement Method _____ Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
MW-5 W-1	14:00 1-12-88	PUMP	500	POLY		YES		YES	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
W-2			"						

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh
1	4.93	OFF SCALE	13.5	
2	5.20	"	13.5	
3	5.00	"	13.5	

NOTES:

1.8 gal/pv / HIGHLY SALINE

Total # of Bottles: _____ Signature: _____

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS Weyerhaeuser Chlorine
PROJECT NAME _____ #_____
CLIENT/CONTACT _____

Well or Surface Site Number [redacted]
Sample Designation MW-2 1/12/88
Date, Time 1-12-88
Weather Overcast

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
14.19		1-12-88 1130	M Scope

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
5	=3	Pump		

Surface Water Flow Speed _____ Measurement Method _____ Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
MW-2 M	12:?? 1-12-88		500	POLY		YES	NO	YES	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
M=	1303					YES	YES		

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp.	Eh					
1	7.34	1564 ?	12.0						
2	10.58	x2250?	12.5						
?	10.60	2300 ?							

NOTES:

x 1.5 GAL / PV

PART ODORS: WAXY, FOAMY

Total # of Bottles: _____ Signature: _____

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS [illegible]
PROJECT NAME ____ # ____
CLIENT/CONTACT ____

Well or Surface Site Number TRANSFER BLANK
Sample Designation 14W-3
Date, Time 1-12-88
Weather overcast

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time

Surface Water Flow Speed ____, Measurement Method ____, Date, Time ____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
1W-3/W-1	1-12-88	Pump	50	Poly	—	Yes	no	Yes	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
W-2	1-12-88								

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				

NOTES:

TRANSFER BLANK

Total # of Bottles: ____ Signature: ____

Sweet-Edwards / EMCON, Inc.
Kelso, WA (206) 423-3560
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS CHLORINE PLANT
PROJECT NAME _____ #_____
CLIENT/CONTACT _____

Well or Surface Site Number MW-1
Sample Designation W-2
Date, Time 3-7-88
Weather PARTLY CLOUDY

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
8.46	—	3-7-88 12:13	ACTAT 150

WELL EVACUATION: 1.8 GAL/PV

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
6	≈3	P Pump	SEE BELOW	3-7-88 BEGIN: 12:45
				END 12:45

Surface Water Flow Speed _____ Measurement Method _____ Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)
METAL	3-7-88 1232	P Pump	500	POLY	≈15'	YES		YES
PH TOC	3-7-88 1234		250	POLY	≈15'	NO		"

Sampler Cleaning Method: Non-Phosphatic detergent wash, H2O rinse, MeOH rinse, Distilled H2O rinse

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity µS	Temp °C	Eh
1	6.53	655	14.5	
2	6.30	630	12.4	
3	6.45	659	12.6	

NOTES:

DEDICATED TUBING

Total # of Bottles: 2

Signature: _____

S-E/E 400-01

Sweet-Edwards / EMCON, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS CHEVRON CHLORINE
PROJECT NAME _____ #_____
CLIENT/CONTACT _____

Well or Surface Site Number MW-2
Sample Designation W-1 W-1
Date, Time 3-7-88
Weather PARTLY CLOUDY

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
9.13		3-7-88 11:05	ACTAT 150

WELL EVACUATION: 1.7 GAL/PV

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
5.5	= 3	PUMP	SEE BELOW	3-7-88 BEGAN 11:10 END 11:55

Surface Water Flow Speed _____ Measurement Method _____ Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)
METALS	3-7-88 11:53	PUMP	500	POLY	≈ 15	YES		YES
PH/COND.	" 11:53		250	POLY	≈ 15	NO		"

Sampler Cleaning Method: Non-Phosphatic detergent wash; H2O rinse; MeOH rinse; Distilled H2O rinse

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				

NOTES:

ON BEACH

DEDICATED TUBING

FIELD METALS OFF SCALE

Total # of Bottles: 2

Signature: _____

S-E/E 400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS WEYECO, CHLORINE
PROJECT NAME _____ #_____
CLIENT/CONTACT _____

Well or Surface Site Number MW-3
Sample Designation W-5
Date, Time 3-7-88
Weather PARTLY CLOUDY

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
10.15 ?		3-7-88 14:02	ACUAT 150

WELL EVACUATION: 1.6 GAL/PV

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
5	≈3	P' PUMP	SEA BELOW	3-7-88 BEG. IN 14:10 END 14:1

Surface Water Flow Speed _____ Measurement Method _____ Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
METAL	3-7-88 14:30	P PUMP	500	[illegible]	18	YES	—	—	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
PH/COND	" 1432	"	250	[illegible]	18	NO			

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				
—	—	—	—					
2	—	—	—					
	—	—	—					

NOTES:

DEACTED TUBING
NEAR SALT PILE
SALINITY OF WATER MIGHT CAUSE ERRONEOUS HYDROLOGY MEASUREMENTS
FIELD METERS OFF SCALE

Total # of Bottles: 2

Signature: [signature]

SEA-400-01

Sweet-Edwards / EMCON, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS WEYERCO CHLORINE
PROJECT NAME _____ #_____
CLIENT/CONTACT _____

Well or Surface Site Number MW-4
Sample Designation W-3
Date, Time 3-7-88
Weather PARTLY CLOUDY

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
13.96		3-7-88 1308	ACTAT 150

WELL EVACUATION: 1.6 GAL/PO

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
5	~ 3	P PUMP	SEE BELOW	3-7-88 BEGIN 1305
				END 1323

Surface Water Flow Speed _____ Measurement Method _____ Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
METAL	3-7-88 1320	P PUMP	500	POLY	15	YES		YES	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
PH & COND	3-7-88 1323	P PUMP	250	POLY	"			"	

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				
—								
—								
—								
PV	REMOVED							

NOTES:

W-3 IS CLOSE TO POND

PH & CONDUCTIVITY OFF SCALE

DEDICATED TUBING

Total # of Bottles: 2

Signature: [signature]

S-EE 400-01

Sweet-Edwards / EMCON, Inc.

Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS WAYECO CALIFORNIA
PROJECT NAME _____ #_____
CLIENT/CONTACT _____

Well or Surface Site Number TRANSFER BLANK
Sample Designation W-4
Date, Time _____
Weather _____

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time

Surface Water Flow Speed _____, Measurement Method _____, Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
METALS	3-7-88 1342	P'PUMP	500	POLY	—	YES		YES	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
PB	3-7-88 1343		250	POLY	—	NO			

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				

NOTES:

W-4 SAMPLE BLANK
DISTILLED FROM RAY-N-PAK KELSO
PURCHASED 3-7-88

Total # of Bottles: 2 Signature: _____

S-E/E 400-01

Sweet-Edwards / EMCON, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS: Weyco Chlorine
PROJECT NAME: _____ #: _____
CLIENT/CONTACT: _____

Well or Surface Site Number: MW-1
Sample Designation: WC-588-W1
Date, Time: 5.9.88 1001
Weather: partly cloudy, 60° F, dead wind

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
9.85		1004	PGM

WELL EVACUATION: 1.6 g/pv

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
4.8	3	peristaltic	as below	1025

Surface Water Flow Speed: _____ Measurement Method: _____ Date, Time: _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
Met.	1028-1031	peristaltic	500	poly	12	Y	—	Y	Non-Phosphatic detergent wash, H2O rinse, MeOH rinse, Distilled H2O rinse
pH		"	250	"		N	—	Y	

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp °C	Eh
1	6.36	6000 µmhos	10.9	
2	6.79	562	10.7	
3	6.88	542	10.5	

NOTES:

duplicate sent to Wey Corp. labs

clear water, odorless visible floating particulates in evacuation bucket

weyco split & CAS split 4 sets total

JJM0 / PGM

Total # of Bottles: 8

Signature: _____

S-E/E 400-01

Sweet-Edwards / EMCON, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS Weyco. Chlorine
PROJECT NAME _____ #_____
CLIENT/CONTACT _____

Well or Surface Site Number MW-12
Sample Designation WC-588-WZ
Date, Time 5.9.88 1136
Weather breezy (mrible) 60°F

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
9.07			PGM

WELL EVACUATION: 1.9 g/pv

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
7.6	4	peristaltic	as below	1159

Surface Water Flow Speed _____ Measurement Method _____ Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
4x Met	1203-1204	peristaltic	500	poly	15	Y	—	Y	Non-Phosphatic detergent wash
* pH			250	"		N	—	Y	H2O rinse HCl
									MeOH rinse dH2O
									Distilled H2O rinse

FIELD WATER QUALITY TESTS:

Pore Vol Number	pH	Conductivity	Temp	Eh
1	6.72	30,500 µmhos	10.5 °C	
2	6.63	28,200	10.2	
3	6.64	26,200	10.0	
4	6.74	25,000	10.0	

NOTES:

clear, moderate sulfur odor, no sediment
slight yellowish tint, slightly foamy
Ken Johnson (Weyerhaeuser)

JJM/PGM/KJ

Total # of Bottles: 8 Signature: _____

S-E/E 400-01

Sweet-Edwards / EMCON, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS: Weyco Chlorine
PROJECT NAME: _____ #: _____
CLIENT/CONTACT: _____

Well or Surface Site Number: MW-4 3
Sample Designation: WC-588-WS
Date, Time: 5.9.88 1219
Weather: rainy, breezy, 55°F

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope, Number or Other)
8.76		1226	PGM

WELL EVACUATION: 2.0 ± gpv

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
6	3	peristaltic	as below	1245

Surface Water Flow Speed: _____ Measurement Method: _____ Date, Time: _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)
4x Met.	1249 - 1250	peristaltic	500	poly	15	Y	—	Y
4x pH			250	"		N	—	Y

Sampler Cleaning Method: Non-Phosphatic detergent wash, H2O rinse, MeOH rinse, Distilled H2O rinse (HCl, dil HNO3)

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh
1	5.78	186,800 µmhos	11.8 °C	
2	6.17	186,100	11.6	
3	6.39	186,300	11.7	

NOTES:

moderate product odor, salty, clear, colorless

JJM/PGM

Total # of Bottles: 8

Signature: _____

S-E/E 400-01

Sweet-Edwards / EMCON, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS: Weyco. Chlorine
PROJECT NAME: _____ #: _____
CLIENT/CONTACT: _____

Well or Surface Site Number: MW-~~1~~4
Sample Designation: WC-588-W3
Date, Time: 5.9.88 1052
Weather: breezy, variable, 60°F

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope / Number or Other)
14.02		1055	PGM

WELL EVACUATION: 1.7 g/pv

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
7	4	peristaltic	as below	1120

Surface Water Flow Speed: _____ Measurement Method: _____ Date, Time: _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
Met.	1125 - 1130	peristaltic	500	poly	14	Y	–	Y	Non-Phosphatic detergent wash, H2O rinse, HCl, H2O, MeOH rinse, Distilled H2O rinse
pH			250	11		N	–	Y	

4 +

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh
1	7.88	1901 µmhos	9.6°C	
2	8.77	2600	9.6	
3	9.62	4600	9.7	

NOTES:

Strong sulfur odor, ~~slight~~ dark orange - brown color
slightly foamy

JM/PGM/KJ

Total # of Bottles: 8

Signature: _____

S-E/E 400-01

Sweet-Edwards / EMCON, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS: Weyco chlorine
PROJECT NAME: _____ #: _____
CLIENT/CONTACT: _____

Well or Surface Site Number: Surface Site
Sample Designation: WC-588-W4
Date, Time: 5.9.88 1348
Weather: breezy, 55°F

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
N/A			

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
N/A			as below	

Surface Water Flow Speed: _____ Measurement Method: _____ Date, Time: _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)
4x Met.		Grab	500	poly	Surface	Y	—	Y
4x pH		"	250	"		N	—	Y

Sampler Cleaning Method: Non-Phosphatic detergent wash, H2O rinse, MeOH rinse, Distilled H2O rinse — HCl 4x.c

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				
	7.75	783 µmhos	11.8°C					

NOTES:

yellowish color tint, odorless

JM/PGM

Total # of Bottles: 8

Signature: _____

S-E/E 400-01

Sweet-Edwards / EMCON, Inc.

Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS Wey. Co. Chlorine
PROJECT NAME _____ #_____
CLIENT/CONTACT _____

Well or Surface Site Number S-X
Sample Designation WC-588-W9
Date, Time 5-9-88 1630
Weather Same

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
N/A			ACTAT 150'

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
N/A	—	PERISTALTIC PUMP	As below	5-9-88

Surface Water Flow Speed _____ Measurement Method _____ Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)
4x Mat.	5-9 1640	peristaltic	500	poly	5	Y	—	Y
4x pH	"	"	250	"		N	—	Y

Sampler Cleaning Method: Non-Phosphatic detergent wash, H2O rinse, MeOH rinse, Distilled H2O rinse — HCl & H_2C

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp °C	Eh				
—	6.32	359 µmhos	9.7 °C					

NOTES:

≈ 10' FROM SPIKE LINE

JM/PGM

Total # of Bottles: 8 Signature: _____

S-E/E 460-01

Sweet-Edwards / EMCON, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS Wey. Co. chlorine
PROJECT NAME _____ #_____
CLIENT/CONTACT _____

Well or Surface Site Number S-Y
Sample Designation G'C-588-W7
Date, Time 5.9.88 1516
Weather Same but drizzly wind S-SE

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
N/A			

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
N/A				

Surface Water Flow Speed _____ Measurement Method _____ Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
4x Met.	1515	peristaltic	500	poly	5	Y	-	Y	Non-Phosphatic detergent wash H2O rinse — HCl MeOH rinse — H_2C Distilled H2O rinse
1x pH			250	"		N	-	Y	

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				
	6.94	1664 µmhos	11.4 °C					

NOTES:

≈ 10' from water ↓ Odorless, colorless when filtered

PGM/JJM

Bottles: 8 Signature: _____

Sweet-Edwards / EMCON, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS Wey. Co. Chlorine
PROJECT NAME _____ #_____
CLIENT/CONTACT _____

Well or Surface Site Number S-2
Sample Designation WC-588-W6
Date, Time 5.9.88 1417
Weather breezy (variable) 55°F

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
N/A			

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
N/A				

Surface Water Flow Speed _____ Measurement Method _____ Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)
4+ Met.		peristaltic	500	poly	5'	Y	-	Y
X pH			250	"		N	-	Y

Sampler Cleaning Method
Non-Phosphatic detergent wash
H2O rinse — HCl
MeOH rinse — H_2O
Distilled H2O rinse

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh
	7.17	219 µmhos	10.2°C	

NOTES:

odorless, colorless (filtered)
10' FROM WATER LINE

JSM/PGM

Total # of Bottles: 8

Signature: [signature]

Sweet-Edwards / EMCON, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS Wey. Co. Chlorine
PROJECT NAME #
CLIENT/CONTACT

Well or Surface Site Number ~~[illegible]~~ Transfer Blank
Sample Designation WC-588-WB
Date, Time 5·9·88 1600
Weather Same

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
N/A			ACTAT 150

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
N/A		PERISTALTIC	SEE BELOW	5-9-88

Surface Water Flow Speed ______ Measurement Method ______ Date, Time ______

SAMPLING:

	Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
4+	Met.	1630	peristaltic	500	poly	N/A	Y	–	Y	Non-Phosphatic detergent wash, H2O rinse, MeOH rinse (HCl), Distilled H2O rinse (dH2O)
·+	pH			250	"		N	–	Y	

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp.	Eh
/	–	/	/	

NOTES:

TRANSFER BLANK

13w/86m

Total # of Bottles: 8

Signature: [signature]

S-E/E 400-01

Sweet-Edwards / EMCON, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS: Weyerhauser Corporation - Chlorine Plant
PROJECT NAME: Longview, WA #
CLIENT/CONTACT: Ken Johnson

Well or Surface Site Number: MW-1
Sample Designation: WC - 788 - W3 *
Date, Time: 7 7 88 1130
Weather: 10-mph wind (N.) 75°F, clear

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
9.29		1129	PGM

WELL EVACUATION: 1.6 g/pv

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
4.8	3	peristaltic pump	as below	1142

Surface Water Flow Speed: _____ Measurement Method: _____ Date, Time: _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
pH Met	1145	peristaltic pump	500 (250)	poly	15	N	—	Y	Non-Phosphatic detergent wash · H2O rinse / MeOH rinse / Distilled H2O rinse (HNO3 + H2O)
			500	"		Y	—	Y	

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp °C	Eh
1	5.55	937 µm	15	
2	5.93	1020	15.5	
3	6.24	963	15.5	

NOTES:

threw away dedicated Tygon
clear, odorless
* duplicate labeled WC - 788 - W5 @ 1205
1 sm.

Total # of Bottles: 3 Signature:

S-E/E 400-01

Sweet-Edwards / EMCON, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS Wey. Co. Chlorine
PROJECT NAME ______ #
CLIENT/CONTACT

Well or Surface Site Number MW-2
Sample Designation WC-788-WG *
Date, Time 7-7-88 1327
Weather Same as T.B.

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
9.91			8Gm

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
4.8	3	1.6 g/pv perist pump	see below	1345

Surface Water Flow Speed ______ Measurement Method ______ Date, Time ______

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)
pH	1400	perist	250	poly		N	—	Y
24 Met		pump	500	"		Y	—	Y

Sampler Cleaning Method: Non-Phosphatic detergent wash, H2O rinse – HNO3, MeOH rinse, Distilled H2O rinse

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh
1	6.91	43600 µmho	16 °C	
2	6.91	41800	15	
3	6.97	39800	15	

NOTES:

moderate sulfur odor, clear
fibrous plant material in well

* Dup labeled WC-788-W @ 1415
1 ~~=~~ lg.

Total # of Bottles: 3

Signature: [signature]

S-E/E 400-01

Sweet-Edwards / EMCON, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS: Weyl. Co. Chlorine
PROJECT NAME: #
CLIENT/CONTACT:

Well or Surface Site Number: MW-3
Sample Designation: WC-788-W4 *
Date, Time: 7.7.88 1240
Weather: same @ MW-4, 80°F

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
9.84		1245	pbm

WELL EVACUATION: 1.6 g/pv

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
5	3	perist-p.-p	as below	

Surface Water Flow Speed: _____ Measurement Method: _____ Date, Time: _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
pH	1305	perist.	250	Poly	15	N	—	Y	Non-Phosphatic detergent wash, H2O rinse, MeOH rinse, Distilled H2O rinse
Y Met		p-p	500	"		Y	—	Y	HNO3 & H2O

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh
1	7.41 *	** µ—	21°C	
2	7.1		20	
3	7.16		19.5	

NOTES:

colorless, salty smell — discarded dedicated Dup. labeled * Tyson WC-788-W7 @ 1325

** > largest conductivity that meter can read, blinks 1 lg. off every scale

backup meter couldn't read conductivity either

Total # of Bottles: 3

Signature:

S-E/E 400-01

Sweet-Edwards / EMCON, Inc.

Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS [illegible]
PROJECT NAME ________ # ________
CLIENT/CONTACT ________

Well or Surface Site Number [illegible]
Sample Designation [illegible]
Date, Time 8 5 98 1049
Weather overcast 60°F

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
9.30		1052	[illegible]

WELL EVACUATION: 1.5 g/pv

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
4.5	3	peristaltic	as below	1103

Surface Water Flow Speed ________ Measurement Method ________ Date, Time ________

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)
[illegible]	1105	perist.	500	poly	12-15	N	—	Y
[illegible]		pump				Y	—	Y

Sampler Cleaning Method: Non-Phosphatic detergent wash, H2O rinse, MeOH rinse, Distilled H2O rinse

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh
1	5.59	709	15°C	
2	5.70	925	14.5	
3	5.92	734	14.5	

NOTES:

Some visible particulates
slight yellowish color
fewer particulates & less color
with 2nd & 3rd pore volumes

[illegible] @ 1210

Total # of Bottles: 3

Signature: [illegible]

S-E/E 400-01

Sweet-Edwards / EMCON, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS: West Co. Chlorine
PROJECT NAME: _____ #: _____
CLIENT/CONTACT: _____

Well or Surface Site Number: MW-4
Sample Designation: WC-788-W1 *
Date, Time: 7.7.88 1:05
Weather: same as MW-1

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
14.41		1210	PGM

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
4.2	3 (1.4 g/pv)	peristaltic - pv-p	as below	1221

Surface Water Flow Speed: _____ Measurement Method: _____ Date, Time: _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)
Trip blank	1225	peristaltic	250	poly	15-16	N	—	Y
WC-788-W2		pv-p	500	"		Y	—	Y

Sampler Cleaning Method: Non-Phosphatic detergent wash / H2O rinse / MeOH rinse / Distilled H2O rinse / HNO3 rinse

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp °C	Eh				
1	6.93	2820 µhr	14					
2	7.42	6110	13					
3	7.71	5830	13					

NOTES:

discarded old dedicated Tygon
Met. Duplicate
slight lt. brown, strong sulfur odor
labeled WC-788-W2 @ 1240
slightly foamy
3rd pv. → very dk. greenish brown (coffee color)
1 lg.

Total # of Bottles: 3

Signature: _____

S-E/E 400-01

Sweet-Edwards / EMCON, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS: Wey. Co. Chlorine
PROJECT NAME: _____ #: _____
CLIENT/CONTACT: _____

Well or Surface Site Number: Transfer Blank
Sample Designation: WC-788-WB
Date, Time: 7.7.88 1307
Weather: sme as WW-3

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
N/A			

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
N/A				

Surface Water Flow Speed: _____ Measurement Method: _____ Date, Time: _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
pH	1338	peristal.	250	poly	N/A	N	—	Y	Non-Phosphatic detergent wash, H2O rinse, HNO3 rinse, MeOH rinse, Distilled H2O rinse
VOA		pump	500	"		Y	—	Y	

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				
N/A								

NOTES:

Bonnard's (R)
1 s-.

Total # of Bottles: 2 Signature: _____

S-E/E 400-01

Sweet-Edwards / EMCON, Inc.

Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS: WC Chlorine
PROJECT NAME: _____ #: _____
CLIENT CONTACT: _____

Well or Surface Site Number: MW-2
Sample Designation: WC-825-W10
Date, Time: 5.5.88 1204
Weather: Sunny w/ MW-1

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
10.24		1207	PSM

WELL EVACUATION: 1.6 g/ft

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
18	3	Peristaltic	as below	1219

Surface Water Flow Speed: _____ Measurement Method: _____ Date, Time: _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)
TOC	1225	peristaltic	40	poly	18-20	N		Y
TOX		peristaltic	500	"		"	-	"

Sampler Cleaning Method: Non-Phosphatic detergent wash / H2O rinse / MeOH rinse / Distilled H2O rinse

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				
1	7.41	41500	14.5					
2	7.17	41700	14					
3	7.06	41500	14					

NOTES:

fine particulates, slight lt. brown (fn. sand)
slight salty odor

Dup = WC-825-W10 @ 1155

1 1/4.

Total # of Bottles: 3

Signature: _____

S-E/E 400-01

Sweet-Edwards / EMCON, Inc.

Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS ______________________
PROJECT NAME ______________________ # ______
CLIENT CONTACT ______________________

Well or Surface Site Number MW-3
Sample Designation
Date, Time 5 5 88 1242
Weather

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
9.51		1246	

WELL EVACUATION: 1.7

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
51	3			1258

Surface Water Flow Speed ______, Measurement Method ______, Date, Time ______

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preserva-tive	Iced (yes,no)
	1305		250		18-20		–	
		pump	500			Y	–	Y

Sampler Cleaning Method: Non-Phosphatic detergent wash, H2O rinse, MeOH rinse, Distilled H2O rinse

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity*	Temp	Eh				
			19					
	7.15		19					
			19					

NOTES:

* DSPH-3 * 1240
> 100,000

clear, moderate salty odor

Total # of Bottles: 3

Signature: ______________________

S-E/E 400-01

Sweet-Edwards / EMCON, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION ADDRESS: [illegible]
PROJECT NAME: ______ #______
CLIENT/CONTACT: ______

Well or Surface Site Number: MW-4
Sample Designation: [illegible]
Date, Time: 5-9-88 1129
Weather: [illegible]

HYDROLOGY MEASUREMENTS:

Nearest .01 ft)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
14.56		1130	SCM

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
~5	3	[illegible]	[illegible]	1145

Surface Water Flow Speed ______, Measurement Method ______, Date, Time ______

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preserva-tive	Iced (yes,no)
[illegible]	1150	[illegible]	[illegible]	[illegible]	20-22	[illegible]	-	Y
[illegible]		[illegible]	[illegible]	[illegible]		Y	-	[illegible]

Sampler Cleaning Method: Non-Phosphatic detergent wash, H2O rinse, MeOH rinse, Distilled H2O rinse

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				
	8.33	13,400	10°C					
[illegible]	7.33	10,000	13					
[illegible]	[illegible]	9500	13					

NOTES:

[illegible] brown, strong sulfur odor, foamy * Dup [illegible] W7
@ 1100

Total # of Bottles: 3

Signature: [illegible]

S-E/E 400-01

Sweet-Edwards / EMCON, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS WC Chlorine
PROJECT NAME #
CLIENT/CONTACT

Well or Surface Site Number Transfer Blank
Sample Designation WC-883-WS
Date, Time 3 5 88 1225
Weather Same as MW-2

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
NA			

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
N/A				

Surface Water Flow Speed ______ Measurement Method ______ Date, Time ______

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)
pH	1235	peri pump	250	poly	N/A	N	–	Y
Metals		pump	500			Y	–	Y

Sampler Cleaning Method: Non-Phosphatic detergent wash, H2O rinse, MeOH rinse, Distilled H2O rinse

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				
N/A								

NOTES:

Borneau's (8)

1 sm.

Total # of Bottles: 2

Signature: [signature]

S-E/E 400-01

APPENDIX C

CHAIN OF CUSTODY FORMS

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) [illegible]
Redmond, WA [illegible]-0415

Chain of Custody / Laboratory Analysis Request

DATE 7-10-87 PAGE 1 OF 1

PROJECT
CLIENT INFO
CONTACT
ADDRESS
TELEPHONE
SAMPLERS NAME [illegible] PHONE# 423-[illegible]
SAMPLERS SIGNATURE [illegible]

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE
1. [illegible] 1-1	7-20			[illegible]
2. [illegible] 1-2	"			"
3. [illegible] 1-3	"			"
4. [illegible] 1-4	"			"
5. [illegible] 1-5	"			"
6. [illegible] 1-6	"			"
7. [illegible] 1-7	"			"
8. [illegible] 1-8	"			"

ANALYSIS REQUESTED

BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	GENERAL CHEMISTRY (Specify) pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	OTHER (Specify)			NUMBER OF CONTAINERS
							X	X*								
							X	X								
							X	X								
							X	X								
							X	X								
							X	X								
							X	X								
							X	X								

Relinquished By Sweet, Edwards & Assoc.
Signature [illegible]
Printed Name [illegible] Edwards
Firm [illegible]
Date/Time

Relinquished By
Signature
Printed Name
Firm
Date/Time

Relinquished By
Signature
Printed Name
Firm
Date/Time

Received By [illegible]
Signature
Printed Name
Firm
Date/Time

Received By
Signature
Printed Name
Firm
Date/Time

Received By
Signature
Printed Name
Firm
Date/Time

PROJECT INFORMATION
Shipping I.D. No.
VIA
Project

SAMPLE RECEIPT
Total No. of Containers
Chain of Custody Seals
Received in good condition
LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS
* Mercury Only
Run total first
Hold For E.P. Tox

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator

SEA-400-05

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE 7-22-87 PAGE 1 OF 2

PROJECT Weyerhaeuser Chlorine #
CLIENT INFO.
CONTACT Ken Johnson
ADDRESS
TELEPHONE# 425-2150
SAMPLERS NAME Craig Wells PHONE# 423-3580
SAMPLERS SIGNATURE Craig E Wells

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	NUMBER OF CONTAINERS
1. MW-2-1A	7-21			Soil								X	X					
2. MW-2-2A	7-21			"								X	X					
3. MW-2-3A	"			"								X	X					
4. MW-2-4A	"			"								X	X					
5. MW-2-5A	"			"								X	X					
6. MW-2-6A	"			"								X	X					
7. MW-2-7A	"			"								X	X	/				
8. MW-2-8A	"			"								X	X	X				

ANALYSIS REQUESTED — GENERAL CHEMISTRY (Specify) — OTHER (Specify)

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By
Signature: Craig E Wells	Signature:	Signature:
Printed Name: Sweet, Edwards	Printed Name:	Printed Name:
Firm: 7-22-87 10:13	Firm:	Firm:
Date/Time:	Date/Time:	Date/Time:
Received By FRW Adair	**Received By**	**Received By**
Signature: Fran Adair	Signature:	Signature:
Printed Name: CAS	Printed Name:	Printed Name:
Firm: 7/22 10:15	Firm:	Firm:
Date/Time:	Date/Time:	Date/Time:

PROJECT INFORMATION
Shipping I.D. No.
VIA
Project

SAMPLE RECEIPT
Total No. of Containers
Chain of Custody Seals
Received in good condition
LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS
* Mercury Only
Run Total mercury, hold For possible E.P. Tox mercury

DISTRIBUTION: WHITE - return to originator YELLOW - lab: PINK - retained by originator

400

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE 7-22-87 PAGE 2 OF 2

PROJECT Weyerhaeuser Chlorine
CLIENT INFO. CONTACT Ken Johnson
ADDRESS
TELEPHONE# 425-2150
SAMPLERS NAME C. Wells PHONE# 423-3580
SAMPLERS SIGNATURE Craig E Wells

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE
1. MW-3-1 A	7-21			Soil
2. MW-3-2 A	"			"
3. MW-3-3 A	"			"
4. MW-3-4 A	"			"
5. MW-3-5 A	"			"
6. MW-3-6 A	"			"
7. MW-3-7 A	"			"
8. MW-3-8 A	"			"

ANALYSIS REQUESTED

BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS * (Circle One)	METALS (TOTAL) * (See Special Inst.)	GENERAL CHEMISTRY (Specify) TCLP ORGANICS	pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	OTHER (Specify)	NUMBER OF CONTAINERS
							X	X						
							X	X						
							X	X						
							X	X						
							X	X						
							X	X						
							X	X						
							X	X						

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By	PROJECT INFORMATION	SAMPLE RECEIPT
Signature: Craig E Wells	Signature	Signature	Shipping I.D. No.	Total No. of Containers
Printed Name: Sweet, Edwards	Printed Name	Printed Name	VIA	Chain of Custody Seals
Firm: 7-22-87 10:13	Firm	Firm	Project	Received in good condition
Date/Time	Date/Time	Date/Time		LAB NO.
Received By FEDEX Agent	**Received By**	**Received By**	**SPECIAL INSTRUCTIONS/COMMENTS**	
Signature	Signature	Signature	* Mercury only	
Printed Name CAS	Printed Name	Printed Name	Run Total mercury, hold for EP Tox mercury	
Firm 7/22 10:10	Firm	Firm		
Date/Time	Date/Time	Date/Time		

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

SEA-400-05

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE 7-24-87 PAGE 1 OF 2

PROJECT Weyerhaeuser Chlorine#
CLIENT INFO.
CONTACT Ken Johnson
ADDRESS
TELEPHONE# 425-2150
SAMPLERS NAME C. Wells PHONE# 423-3580
SAMPLERS SIGNATURE Craig E Wells

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE
1. MW-4-1 A	7-23			Soil
2. MW-4-2 A	"			"
3. MW-4-3 A	"			"
4. MW-4-4 A	"			"
5. MW-4-5 A	"			"
6. MW-4-6 A	"			"
7. MW-4-7 A	"			"
8. MW-4-8-A	"			"

ANALYSIS REQUESTED

BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS * (Circle One)	METALS (TOTAL) * (See Special Inst.)	TCLP ORGANICS	GENERAL CHEMISTRY (Specify) pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	OTHER (Specify)	NUMBER OF CONTAINERS
							X	X						

Relinquished By Sweet, Edwards & Assoc.
Signature Craig E Wells
Printed Name Craig E Wells
Firm Sweet, Edwards
Date/Time 7-24-87 10:48

Relinquished By
Signature
Printed Name
Firm
Date/Time

Received By Tracy Adair
Signature Tracy Adair
Printed Name CAS
Firm
Date/Time 7-24-87 10:48

Received By
Signature
Printed Name
Firm
Date/Time

Relinquished By
Signature
Printed Name
Firm
Date/Time

Received By
Signature
Printed Name
Firm
Date/Time

PROJECT INFORMATION
Shipping I.D. No.
VIA
Project

SAMPLE RECEIPT
Total No. of Containers
Chain of Custody Seals
Received in good condition
LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS
* Mercury Only
Run Total mercury, hold For EP Tox mercury

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - held by originator

100-06

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE July 24, 87 PAGE 2 OF 2

PROJECT Weyerhaeuser Chlorine
CLIENT INFO.
CONTACT Ken Johnson
ADDRESS
TELEPHONE# 425-2150
SAMPLERS NAME C. Wells PHONE# 423-3580
SAMPLERS SIGNATURE Craig E Wells

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One) *	METALS (TOTAL) (See Special Inst.) *	TCLP ORGANICS	pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	NUMBER OF CONTAINERS
1. MW-4-9A	7-23			Soil								X	X					
2. MW-4-10A	"											X	X					
3.																		
4.																		
5.																		
6.																		
7.																		
8.																		

GENERAL CHEMISTRY (Specify)
OTHER (Specify)

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By	PROJECT INFORMATION	SAMPLE RECEIPT
Signature: Craig E. Wells	Signature	Signature	Shipping I.D. No.	Total No. of Containers
Printed Name: Craig E Wells	Printed Name	Printed Name	VIA	Chain of Custody Seals
Firm: Sweet, Edwards	Firm	Firm	Project	Received in good condition
Date/Time: 7-24-87 10:48	Date/Time	Date/Time		LAB NO.
Received By Tracy Adair	**Received By**	**Received By**	**SPECIAL INSTRUCTIONS/COMMENTS**	
Signature: Tracy Adair	Signature	Signature	* See note - Page 1	
Printed Name: CAS	Printed Name	Printed Name		
Firm	Firm	Firm		
Date/Time: 7-24-87 10:48	Date/Time	Date/Time		

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

SEA-400-05

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE 8-5-87 PAGE 1 OF 1

PROJECT Weyerhaeuser-Chlorine / Xerox # 54106.01
CLIENT INFO. CONTACT Ken Johnson
ADDRESS
TELEPHONE# 425-2150
SAMPLERS NAME J. Morales PHONE 423-3580
SAMPLERS SIGNATURE

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE
1. MW-1	8-5-87	12:20		H_2O
2. MW-2	8-5-87	13:30		H_2O
3. MW-3	8-5-87	14:30		H_2O
4. MW-4	8-5-87	15:30		H_2O
5.				
6.				
7.				
8.				

ANALYSIS REQUESTED

BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One) *	METALS (TOTAL) (See Special Inst.) **	TCLP ORGANICS	GENERAL CHEMISTRY (Specify) pH COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	Sulfates	Sulfide	Cyanide	OTHER (Specify)			NUMBER OF CONTAINERS
						X	X	X		X			X	X	X				10
						X	X	X		X			X	X	X				
						X	X	X		X			X	X	X				
						X		X		X			X	X	X				

Relinquished By Sweet, Edwards & Assoc.
Signature
James Morales
Printed Name
SEA
Firm
8-5-87 16:30
Date/Time

Relinquished By
Signature
Printed Name
Firm
Date/Time

Relinquished By
Signature
Printed Name
Firm
Date/Time

Received By
Tracy Adair
Signature
Tracy Adair
Printed Name
CAS
Firm
8-5-87 4:35
Date/Time

Received By
Signature
Printed Name
Firm
Date/Time

Received By
Signature
Printed Name
Firm
Date/Time

PROJECT INFORMATION
Shipping I.D. No.
VIA
Project

SAMPLE RECEIPT
Total No. of Containers
Chain of Custody Seals
Received in good condition
LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS
* EPTOX metals - Mercury
** Metals - Mercury, Fe, Cr., Pb, Ba, Mn

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

A-400-05

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE 1-12-88 PAGE 1 OF 2

PROJECT [illegible] # 541.01.02
CLIENT INFO.
CONTACT
ADDRESS
TELEPHONE#
SAMPLERS NAME PHONE#
SAMPLERS SIGNATURE

ANALYSIS REQUESTED — GENERAL CHEMISTRY (Specify) — OTHER (Specify)

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	[illegible]	PH / Conductivity					NUMBER OF CONTAINERS
1. MW-1 / W-1	1-12-88	See note		H_2O														✓						
2. MW-1 / W-2	"	"		H_2O															✓					
3. MW-2 / W-1	"	"		H_2O														✓						
4. MW-2 / W-2	"	"		H_2O														"	✓					
5. MW-3 / W-1	"	"		H_2O														✓						
6. MW-3 / W-2	"	"		H_2O															✓					
7. MW-4 / W-1	"	"		H_2O														✓						
8. MW 4 / W-2	"	"		H_2O															✓					

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By
Signature: [signature]	Signature	Signature
Printed Name: James Holmes	Printed Name	Printed Name
Firm: SEA	Firm	Firm
Date/Time: 15:07 1-12-88	Date/Time	Date/Time

Received By	Received By	Received By
Signature: Fran Adair	Signature	Signature
Printed Name: FRAN ADAIR	Printed Name	Printed Name
Firm: CAS	Firm	Firm
Date/Time: 1/12 15:09	Date/Time	Date/Time

PROJECT INFORMATION
Shipping I.D. No.
VIA
Project

SAMPLE RECEIPT
Total No. of Containers
Chain of Custody Seals
Received in good condition
LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

SEA-400-05

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE 1-2-88 PAGE ___ OF ___

PROJECT Weyerhaeuser # 541 01.02

CLIENT INFO.
CONTACT ___
ADDRESS ___
TELEPHONE# ___
SAMPLERS NAME ___ PHONE# ___
SAMPLERS SIGNATURE ___

ANALYSIS REQUESTED — GENERAL CHEMISTRY (Specify) — OTHER (Specify)

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	Mercury	pH & Conductivity					NUMBER OF CONTAINERS
1. MW5/W1	1-2-88	[illegible]		H_2O														/	/					
2. MW5/W-2	"	"		H_2O														/	/					
3.																								
4.																								
5.																								
6.																								
7.																								
8.																								

Relinquished By Sweet, Edwards & Assoc.
Signature: [signature]
Printed Name: James Morales
Firm: SEA
Date/Time: 15:07 1-2-88

Received By
Signature: Fran Adair
Printed Name: FRAN ADAIR
Firm: CAS
Date/Time: 1/2 15:09

Relinquished By
Signature
Printed Name
Firm
Date/Time

Received By
Signature
Printed Name
Firm
Date/Time

Relinquished By
Signature
Printed Name
Firm
Date/Time

Received By
Signature
Printed Name
Firm
Date/Time

PROJECT INFORMATION
Shipping I.D. No.
VIA
Project

SAMPLE RECEIPT
Total No. of Containers
Chain of Custody Seals
Received in good condition
LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

A-400-05

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE 3-7-88 PAGE 1 OF 1

PROJECT WEYERCO, CHLORINE PLANT #
CLIENT INFO.
CONTACT
ADDRESS
TELEPHONE#
SAMPLERS NAME JAMES MORALES PHONE# 423-3580
SAMPLERS SIGNATURE

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	GENERAL CHEMISTRY (Specify) pH COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	Mercury/Hg	OTHER (Specify)	NUMBER OF CONTAINERS
1. W-1	3-7-88	COMP		H_2O											X			X		2
2. W-2	"	"		"											X			X		2
3. W-3	"	"		"											X			X		2
4. W-4	"	"		"											X			X		2
5. W-5	"	"		"											X			X		2
6.	"	"																		
7.																				
8.																				

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By	PROJECT INFORMATION	SAMPLE RECEIPT
Signature	Signature	Signature		
JAMES MORALES			Shipping I.D. No.	Total No. of Containers
Printed Name SEA	Printed Name	Printed Name		Chain of Custody Seals
Firm 3-7-88 1505	Firm	Firm	VIA	Received in good condition
Date/Time	Date/Time	Date/Time	Project	LAB NO.
Received By	**Received By**	**Received By**	**SPECIAL INSTRUCTIONS/COMMENTS**	
Signature FRAN Adair	Signature	Signature		
Printed Name QAS	Printed Name	Printed Name		
Firm 3/7/88 1508	Firm	Firm		
Date/Time	Date/Time	Date/Time		

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

SEA-400-05

Sweet-Edwards / EMCON, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE 5-10-88 PAGE 1 OF 2

PROJECT WEYERHAEUSER CHLORINE # 341.01.02
CLIENT INFO.
CONTACT KEN JOHNSON
ADDRESS WEYERHAEUSER, LONGVIEW
TELEPHONE#
SAMPLERS NAME JAMES MONKS PHONE# 425-3580
SAMPLERS SIGNATURE

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	GENERAL CHEMISTRY (Specify) (pH) COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	Hg	OTHER (Specify)	NUMBER OF CONTAINERS
1. WC-588-W1	5-9-88	16 hours		H_2O											X			X		4
2. WC-588-W2															X			X		4
3. WC-588-W3															X			X		4
4. WC-588-W4															X			X		4
5. WC-588-W5															X			X		4
6. WC-588-W6															X			X		4
7. WC-588-W7															X			X		4
8. WC-588-W8															X			X		4

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By	PROJECT INFORMATION	SAMPLE RECEIPT
Signature	Signature	Signature		
Printed Name JAMES MONKS	Printed Name	Printed Name	Shipping I.D. No.	Total No. of Containers
Firm SEA	Firm	Firm	VIA	Chain of Custody Seals
Date/Time 5-10-88 0923	Date/Time	Date/Time	Project	Received in good condition
Received By	Received By	Received By		LAB NO.
Signature FRAN ADAIR	Signature	Signature	SPECIAL INSTRUCTIONS/COMMENTS	
Printed Name CAS	Printed Name	Printed Name		
Firm 5/10/88 0925	Firm	Firm		
Date/Time	Date/Time	Date/Time		

DISTRIBUTION: WHITE - return to originator. YELLOW - lab; PINK - retained by originator.

Sweet-Edwards / EMCON, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE 5-10-88 PAGE 2 OF 2

PROJECT WATERS & HEDGE CHEVRON # 341 01.02
CLIENT INFO.
CONTACT KEN JOHNSON
ADDRESS
TELEPHONE#
SAMPLERS NAME JAMES MORALES PHONE# 206 423-3580
SAMPLERS SIGNATURE

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE
1. MW-580-W9	5-9-88	362 BOMB		H2O
2.				
3.				
4.				
5.				
6.				
7.				
8.				

ANALYSIS REQUESTED

BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	GENERAL CHEMISTRY (Specify)				OTHER (Specify)						NUMBER OF CONTAINERS
										SP. COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	Hg							
										X			X							4

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By	PROJECT INFORMATION	SAMPLE RECEIPT
Signature	Signature	Signature		
Printed Name JAMES MORALES	Printed Name	Printed Name	Shipping I.D. No.	Total No. of Containers
Firm SEA	Firm	Firm	VIA	Chain of Custody Seals
Date/Time 5-10-88 . 0923	Date/Time	Date/Time	Project	Received in good condition
Received By	Received By	Received By		LAB NO.
Signature FRED ACHIE	Signature	Signature		
Printed Name CAS	Printed Name	Printed Name		
Firm 5/10/88 0926	Firm	Firm		
Date/Time	Date/Time	Date/Time		

SPECIAL INSTRUCTIONS/COMMENTS

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

S-E/E 400-05

Sweet-Edwards / EMCON, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE 5·10·88 PAGE 1 OF 1

PROJECT Weyerhaeuser Chlorine # 54101.02
CLIENT INFO.
CONTACT Ken Johnson
ADDRESS
TELEPHONE#
SAMPLERS NAME Graham Mortyn PHONE# 423-3580
SAMPLERS SIGNATURE

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE
1. WC-588-W10	5·9·88	1029		H_2O
2. WC-588-W11		1208		
3. WC-588-W12		1131		
4. WC-588-W13		1358		
5. WC-588-W14		1248		
6. WC-588-W15		1448		
7. WC-588-W16		1546		
8. WC-588-W17 / WC-588-W18		1636 / 1450		

ANALYSIS REQUESTED

BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.) Hg	TCLP ORGANICS	GENERAL CHEMISTRY (Specify) pH COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	OTHER (Specify)	NUMBER OF CONTAINERS
								X		X				2

Relinquished By Sweet-Edwards & Assoc.
Signature
GRAHAM MORTYN
Printed Name
S-E/E
Firm
5·12·88 0957
Date/Time

Relinquished By
Signature
Printed Name
Firm
Date/Time

Relinquished By
Signature
Printed Name
Firm
Date/Time

PROJECT INFORMATION
Shipping I.D. No.
VIA
Project

SAMPLE RECEIPT
Total No. of Containers
Chain of Custody Seals
Received in good condition
LAB NO.

Received By
Signature
FRAN ADAIR
Printed Name
VAS
Firm
5/12/88 0959
Date/Time

Received By
Signature
Printed Name
Firm
Date/Time

Received By
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK [illegible] by originator.

S/E 400-05

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE 7.7.88 PAGE 1 OF 1

PROJECT Weyerhauser Corp. #
CLIENT INFO. Chlorine Plant
CONTACT Craig Wells
ADDRESS
TELEPHONE#
SAMPLERS NAME Graham Mertyn PHONE#
SAMPLERS SIGNATURE

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE
1. WC-788-W1	7.7.88	1225		H_2O
2. WC-788-W2		1240		
3. WC-788-W3		1145		
4. WC-788-W4		1305		
5. WC-788-W5		1205		
6. WC-788-W6		1400		
7. WC-788-W7		1325		
WC-788-W8		1330		
8. WC-788-W9		1415		

ANALYSIS REQUESTED

BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	GENERAL CHEMISTRY (Specify)				OTHER (Specify)			NUMBER OF CONTAINERS
										pp. cond.	Alk	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K				
								X		X							2
								X									1
								X		X							2
								X		X							2
								X									1
								X		X							2
								X									1
								X		X							2
								X									1

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By
Signature	Signature	Signature
Printed Name GRAHAM MORTYN	Printed Name	Printed Name
Firm S-E/E	Firm	Firm
Date/Time 7.7.88 1418	Date/Time	Date/Time
Received By	Received By	Received By
Signature FRAN ADAIR	Signature	Signature
Printed Name CAS	Printed Name	Printed Name
Firm 7/7/88 14:21	Firm	Firm
Date/Time	Date/Time	Date/Time

PROJECT INFORMATION
Shipping I.D. No.
VIA
Project

SAMPLE RECEIPT
Total No. of Containers
Chain of Custody Seals
Received in good condition
LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS
Hg

DISTRIBUTION WHITE - return to originator YELLOW - lab; PINK - retained by originator

SEA-400-05

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE 8·5·88 PAGE 1 OF 1

PROJECT Wey. Co. Chlorine #
CLIENT INFO.
CONTACT Craig Wells
ADDRESS
TELEPHONE#
SAMPLERS NAME Graham Mortyn PHONE#
SAMPLERS SIGNATURE

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE
1. WC-888-W1	8·5·88	see bottles		H_2O
2. WC-888-W2				
3. WC-888-W3				
4. WC-888-W4				
5. WC-888-W6				
6. WC-888-W7				
7. WC-888-W8 / WC-888-W9				
8. WC-888-W10				

ANALYSIS REQUESTED

BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	GENERAL CHEMISTRY (Specify) pH, COND, ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	OTHER (Specify)	NUMBER OF CONTAINERS
								X		X				2
								X		X				2
								X		X				2
								X		X				2
								X						1
								X						1
								X		X				2
								X						1

Relinquished By Sweet, Edwards & Assoc.
Signature
Printed Name GRAHAM MORTYN
Firm S-E/E
Date/Time 8·5·88 1324

Relinquished By
Signature
Printed Name
Firm
Date/Time

Relinquished By
Signature
Printed Name
Firm
Date/Time

Received By DSI DRMS
Signature
Printed Name
Firm
Date/Time

Received By
Signature
Printed Name
Firm
Date/Time

Received By
Signature
Printed Name
Firm
Date/Time

PROJECT INFORMATION
Shipping I.D. No.
VIA
Project

SAMPLE RECEIPT
Total No. of Containers
Chain of Custody Seals
Received in good condition
LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS
no WC-888-W5
* Hg

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator

400-05

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0416

Chain of Custody / Laboratory Analysis Request

DATE SEPT 3 PAGE 1 OF 1

PROJECT Wayco / INTEROX # 54106.01
CLIENT INFO.
CONTACT Ken Johnson
ADDRESS
TELEPHONE#
SAMPLERS NAME S.R. Henshaw PHONE# 423-3580
SAMPLERS SIGNATURE S R Henshaw

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	GENERAL CHEMISTRY (Specify) pH, COND ALK	NO_3/NO_2, Cl SO_4	(Na)S	Hg, Ba, Pb, Tom/ Cr	Cyanide	Fluoride	OTHER (Specify)			NUMBER OF CONTAINERS
1. GW-1	9/3/87			WATER											X		X	X	X	X				3
2. GW-2	"			"											X		X	X	X	X				3
3. GW-3	"			"											X		X	X	X	X				3
4. GW-4	"			"											X		X	X	X	X				3
5.																								
6.																								
7.																								
8.																								

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By	PROJECT INFORMATION	SAMPLE RECEIPT
Signature S.R. Henshaw	Signature	Signature		1
Printed Name Sweat, Edwards	Printed Name	Printed Name	Shipping I.D. No.	Total No. of Containers
Firm 9/4/87 0744	Firm	Firm	VIA	Chain of Custody Seals
Date/Time	Date/Time	Date/Time		Received in good condition
Received By Mary Jepson	Received By Bonnie Chappel	Received By	Project	LAB NO.
Signature	Signature BONNIE CHAPPEL	Signature		
Printed Name Mary Jepson	Printed Name Wayco	Printed Name		
Firm Weyerhaeuser Paper Co.	Firm 9/5/87 11:00	Firm		
Date/Time 9/4/87 8:50 A.M.	Date/Time	Date/Time		

SPECIAL INSTRUCTIONS/COMMENTS
Filter "metal" samples

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

SEA-400-05

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE 11-4-87 PAGE _____ OF _____

PROJECT WEYERHAEUSER # SA101.02
CLIENT INFO.
CONTACT _____
ADDRESS _____
TELEPHONE# _____
SAMPLERS NAME [illegible] PHONE# _____
SAMPLERS SIGNATURE [illegible]

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE
1. M-1 MW-1	11-4/87	See bottles		H_2O
2. M-2 MW-4	11-4/87	"		H_2O
3. M-3 MW-2	11-4/87	"		H_2O
4. M-4 MW-3	11-4/87	"		H_2O
5. M-5 —	11-4/87	"		
6.				
7.				
8.				

ANALYSIS REQUESTED

BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	GENERAL CHEMISTRY (Specify) pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	HG	OTHER (Specify)				NUMBER OF CONTAINERS
																		4
																		4
																		4
																		4
																		1

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By
Signature [illegible]	Signature	Signature
Printed Name	Printed Name	Printed Name
Firm	Firm	Firm
Date/Time	Date/Time	Date/Time
Received By	**Received By**	**Received By**
Signature	Signature	Signature
Printed Name	Printed Name	Printed Name
Firm	Firm	Firm
Date/Time	Date/Time	Date/Time

PROJECT INFORMATION
Shipping I.D. No.
VIA
Project

SAMPLE RECEIPT
Total No. of Containers
Chain of Custody Seals
Received in good condition
LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS
FIELD FILTERED
EACH LOCATION HAS BOTTLES IDENTIFIED A, B C, D 4 SAMPLES EACH LOCATION

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; [illegible] retained by originator.

SEA-400-05

APPENDIX D

LABORATORY RESULTS

Columbia Analytical Services, Inc.

1152 3rd Avenue • Longview, WA 98632 • (206) 577-7222

September 8, 1987

Craig Wells
Sweet & Edwards
P.O. Box 328
Kelso, WA 98626

RE: Weyco Chlorine Plant--Ken Johnson

Dear Craig,

Enclosed are the results for tests done on samples submitted to our lab on July 21, 22, and 24 1987. For your reference our service request numbers for this work are 87387, 87396, and 87408.

If you have any questions please give us a call.

Respectfully submitted,
COLUMBIA ANALYTICAL SERVICES, INC.

Mike Shelton

Mike Shelton

COLUMBIA ANALYTICAL SERVICES
1152 3RD AVE, LONGVIEW, WA
(206) 577-7222

Chlorine Plant and Interior

CLIENT: Sweet & Edwards
--Craig Wells
Date:

PROJECT: Weyco Chlorine Plant
--Ken Johnson
Work (

Analytical Report

Sample	Lab Code	Solids %	EP TOX Mercury mg/L in Extract	Total Mercury mg/kg Dry Basis
MW-1-1	387-1	96	<0.0002	<0.1
MW-1-2	387-2	95	<0.0002	<0.1
MW-1-3	387-3	95	<0.0002	<0.1
MW-1-4	387-4	82	<0.0002	<0.1
MW-1-5	387-5	79	0.0043	<0.1
MW-1-6	387-6	78	<0.0002	<0.1
MW-1-7	387-7	80	<0.0002	<0.1
MW-1-8	387-8	78	<0.0002	<0.1

QA-QC Report

Sample	Type	Units	A	B	AVG	Spike Level	Recovery %
MW-1-1	Total	mg/kg	<0.1	<0.1	<0.1	0.44	102
MW-1-4	EPTOX	mg/L	<0.0005	<0.0005	<0.0005	0.0010	102

Approved by: Mike Shelton Date: 9/8/87

COLUMBIA ANALYTICAL SERVICES, INC.
1152 3RD AVE. LONGVIEW, WA 98632
(206) 577-7222

CLIENT: Sweet & Edwards
--Craig Wells

Date: September 8, 1987

PROJECT: Weyco Chlorine Plant
--Ken Johnson

Work Order: 87396

Analytical Report

Sample	Lab Code	Solids %	EP TOX Mercury mg/L in Extract	Total Mercury mg/kg Dry Basis
MW-2-1A	396-1	95	<0.0002	<0.1
MW-2-2A	396-2	93	<0.0002	<0.1
MW-2-3A	396-3	93	<0.0002	<0.1
MW-2-4A	396-4	69	0.00021	0.46
MW-2-5A	396-5	72	<0.0002	<0.1
MW-2-6A	396-6	75	<0.0002	<0.1
MW-2-7A	396-7	78	<0.0002	<0.1
MW-2-8A	396-8	79	<0.0002	<0.1
MW-3-1A	396-9	92	<0.0002	<0.1
MW-3-2A	396-10	83	0.00024	1.9
MW-3-3A	396-11	86	<0.0002	<0.1
MW-3-4A	396-12	95	<0.0002	<0.1
MW-3-5A	396-13	82	<0.0002	<0.1
MW-3-6A	396-14	77	<0.0002	<0.1
MW-3-7A	396-15	78	<0.0002	<0.1
MW-3-8A	396-16	80	<0.0002	<0.1

QA-QC Report

Sample	Type	Units	A	B	AVG	Spike Level	% Recovery
MW-2-1A	Total	mg/kg	<0.1	<0.1	<0.1	0.43	86
MW-3-4A	Total	mg/kg	<0.1	<0.1	<0.1	0.34	124
MW-3-2A	EPTOX	mg/L	0.0002	0.0002	0.0002	0.001	118

Approved by: Mike Shelton Date: 9/8/87

COLUMBIA ANALYTICAL SERVICES, INC.
1152 3RD AVE, LONGVIEW, WA 98632
(206) 577-7222

CLIENT: Sweet & Edwards
--Craig Wells

PROJECT: Weyco Chlorine Plant
--Ken Johnson

Date: September 8, 1987

Work Order: 87408

Analytical Report

Sample	Lab Code	Solids %	EP TOX Mercury mg/L in Extract	Total Mercury mg/kg Dry Basis
MW-4-1A	408-1	94	<0.0002	<0.1
MW-4-2A	408-2	90	<0.0002	0.2
MW-4-3A	408-3	95	<0.0002	0.2
MW-4-4A	408-4	94	<0.0002	0.1
MW-4-5A	408-5	94	<0.0002	<0.1
MW-4-6A	408-6	80	<0.0002	<0.1
MW-4-7A	408-7	79	0.0005	<0.1
MW-4-8A	408-8	75	0.0005	<0.1
MW-4-9A	408-9	75	<0.0002	0.1
MW-4-10A	408-10	73	<0.0002	<0.1

QA-QC Report

Sample	Type	Units	A	B	Avg	Spike Level	% Recovery
MW-4-4A	Total	mg/kg	0.2	<0.1	0.1	0.5	76
MW-4-5A	EPTOX	mg/L	<0.0002	<0.0002	<0.0002	0.001	119

Approved by: Mike Shelton Date: 9/8/87

COLUMBIA ANALTYICAL SERVICES, INC.
1152 3RD AVE. LONGVIEW, WA 98632
(206) 577-7222

CLIENT: Sweet & Edwards
--Craig Wells
PROJECT: Weyco/Interox

Date: September 9, 1987

Work Order: 87393, 87399, 87402, 87404, 87409, 87432

Analytical Report

Sample Name:		MW-1	MW-2	MW-3	MW-4
Lab Code:		432-1	432-2	432-3	432-4
pH		6.4	6.3	6.3	10.4
Conductivity	umhos/cm	1170	88000	490000	25000
Cyanide	mg/L	<0.01	<0.01	<0.01	<0.01
Sulfide	mg/L	<1	<1	<1	360
Sulfate	mg/L	153	500	1020	616
Mercury	mg/L	<0.0002	<0.0002	0.004	0.039
Barium	mg/L	0.09	0.29	<1.0	0.076
Chromium	mg/L	<0.01	<0.1	<1.001	<0.05
Iron	mg/L	12	46	<5	2.2
Lead	mg/L	0.037	<0.010	<0.010	0.050
Manganese	mg/L	2.2	8.6	<1	<0.01
Sodium	mg/L	109	16000	127000	5120
TOX	mg/L	0.10	1.46*	24.8*	5.39*

* Possible inorganic chloride interference. Sample dilutions and extra potassium nitrate washing was performed to removed as much inorganic chloride as possible.

Approved By: S.W. Vincent Date: 9/9/87

Columbia Analytical Services, Inc.
1152 3rd Avenue • Longview, WA 98632 • (206) 577-7222

October 7, 1997

Craig Wells
Sweet & Edwards
P.O. Box 328
Kelso, WA 98632

RE: Soil

Dear Craig:

Enclosed are the results of samples submitted to our lab on September 4, 1987. For your reference, our service request number for this work is 87528.

Please call if you have any questions.

Respectfully submitted:
COLUMBIA ANALYTICAL SERVICES, INC.

Mike Shelton

Mike Shelton

COLUMBIA ANALYTICAL SERVICES, INC.
1152 3RD AVE. LONGVIEW, WA 98632
(206) 577-7222

CLIENT: Sweet & Edwards
--Craig Wells

October 7, 1987

PROJECT: Interox

WORK ORDER #: 87529

Analytical Report
Total mg/kg
Dry Basis

Sample Name:	2 #3	2 #4	3 #1	3 #2	3 #3	3 #4
Lab Code:	528-7	528-8	528-9	528-10	528-11	528-12
Lead	88	52	210	184	149	<30
Chromium	28	20	33	46	38	84
Barium	123	110	433	210	139	12
Mercury	2.7	1.3	1.0	1.0	1.2	<0.7
Sodium	6040	3300	5870	3420	11100	17700
Solids %	77.0	93.0	78.9	76.0	57.6	28.4

EP TOXICITY
mg/L

Lead	<0.5	-	<0.5	<0.5	-	-
Chromium	<0.1	-	<0.1	<0.1	-	-
Barium	0.39	-	0.45	0.64	-	-
Mercury	0.0007	-	0.0012	0.025	-	-
*Cadmium	<0.05	-	<0.05	<0.05	-	-
*Silver	<0.1	-	<0.1	<0.1	-	-

* Added at no charge.

Approved by: Mike Skelton Date: 10/7/87

COLUMBIA ANALYTICAL SERVICES, INC.
1152 3RD AVE, LONGVIEW, WA 98632
(206) 577-7222

CLIENT: Sweet & Edwards
--Craig Wells

October 7, 1987

PROJECT: Interim

WORK ORDER #: 87528

Analytical Report
Total mg/kg
Dry Basis

Sample Name:	1 #1	1 #2	1 #3	1 #4	2 #1	2 #2
Lab Code:	528-1	528-2	528-3	528-4	528-5	528-6
Lead	45	247	99	40	112	108
Chromium	14	20	18	9.5	14	18
Barium	103	93	141	211	82	152
Mercury	1.3	0.4	0.3	<0.2	<0.3	<0.3
Sodium	2750	3780	3130	1720	7610	10700
Solids %	90.7	75.3	77.5	90.9	87.8	68.2

EP TOXICITY
mg/L

Lead	<0.5	<0.5	-	-	<0.5	-
Chromium	<0.1	<0.1	-	-	<0.1	-
Barium	0.55	<0.2	-	-	3.45	-
Mercury	0.0004	0.0007	-	-	0.0028	-
*Cadmium	<0.05	<0.05	-	-	<0.05	-
*Silver	<0.1	<0.1	-	-	<0.1	-

* Added at no charge.

Approved by: Mike Skelton Date: 10/7/87

Columbia Analytical Services, Inc.
1152 3rd Avenue • Longview, WA 98632 • (206) 577-7222

October 7, 1987

Craig Wells
Sweet Edwards
P.O. Box 328
Kelso, WA 98625

RE: Water & Soil

Dear Craig:

Enclosed are the results of samples submitted to our lab on September 4, 1987. For your reference, our service request number for this work is 87326.

Please call if you have any questions.

Respectfully submitted:
COLUMBIA ANALYTICAL SERVICES, INC.

Mike Shelton

Mike Shelton

COLUMBIA ANALYTICAL SERVICES, INC.
1152 3RD AVE. LONGVIEW, WA 98632
(206) 577-7222

CLIENT: Sweet Edwards
--Craig Wells
PROJECT: Interox

October 7, 1987

WORK ORDER #: 87526

Analytical Report
mg/L

Sample Name:	A	B	C	D
Lab Code:	526-1	526-2	526-3	526-4
pH	* 10.3	6.7	7.1	7.1
Conductivity micromhos/cm	21360	20120	12.0	91000
Fluoride	1.9	<0.05	0.40	0.57
Cyanide	<0.025	<0.01	<0.01	<0.01
Barium	0.33	0.19	0.08	1.1
Chromium	<0.02	<0.02	<0.02	<0.2
Lead	<0.01	<0.01	<0.005	<0.1
Sodium	4040	15000	80	949000
Mercury	0.033	<0.005	<0.005	<0.005
		<0.0005	<0.0005	<0.0005

* High presence sulfide

as per Mike 1-26-88

Approved by: Mike Shelton Date: 10/7/87

COLUMBIA ANALYTICAL SERVICES, INC.
1152 3RD AVE. LONGVIEW, WA 98632
(206) 577-7222

CLIENT: Sweet Edwards
--Craig Wells
PROJECT: Interox

October 7, 1987

WORK ORDER #: 87526

Analytical Report
mg/L

Sample Name: / Lab Code:	T 526-5	X 526-6	Y 526-7	Z 526-8
pH	5.7	6.5	6.4	6.5
Conductivity micromhos/cm	3.3	206	169	177
Fluoride	<0.05	0.23	0.21	0.18
Cyanide	<0.01	<0.01	<0.01	<0.01
Barium	<0.01	0.03	0.05	0.02
Chromium	<0.02	<0.02	<0.02	<0.02
Lead	<0.005	<0.005	<0.005	<0.005
Sodium	0.7	15	20	22
Mercury	<0.005	<0.005	<0.005	<0.005

all are <0.0005
as per mike 1-26-88

Approved by: Mike Shelton Date: 10/7/87

COLUMBIA ANALYTICAL SERVICES, INC.
1152 3RD AVE. LONGVIEW, WA 98632
(206) 577-7222

CLIENT: Sweet Edwards
--Craig Wells
PROJECT: Interox

October 7, 1987

WORK ORDER #: 87526

Analytical Report
mg/kg

Sample Name:	X	Y	Z
Lab Code:	[illegible]	[illegible]	[illegible]
Barium	[illegible]	27	27
Chromium	4.5	6.0	6.0
Lead	<14	<14	<10
Sodium	695	465	434
Mercury	<0.2	<0.2	<0.2
Solids %	[illegible]	75.6	75.5

EP Toxicity
mg/L

Barium	-	-	<0.02
Chromium	-	-	<0.01
Lead	-	-	<0.05
Mercury	-	-	<0.0005
Silver	-	-	<0.01
Cadmium	-	-	<0.01

Approved by: Mike Shelton Date: 10/7/87

Columbia Analytical Services, Inc.

1152 3rd Avenue • Longview, WA 98632 • (206) 577-7222

November 9, 1987

Jim Morales
Sweet & Edwards
P.O. Box Drawer B
Kelso, WA 98626

RE: Weyerhaeuser Chlorine Project

Dear Jim:

Enclosed are the results of samples submitted to our lab on November 4, 1987. For your reference, our service request number for this work is 87717.

Please call if you have any questions.

Respectfully submitted:
COLUMBIA ANALYTICAL SERVICES, INC.

Mike Shelton

Mike Shelton

COLUMBIA ANALYTICAL SERVICES, INC.
1152 3RD AVE. LONGVIEW, WA 98632
(206) 577-7222

CLIENT: Sweet & Edwards
--Jim Morales

November 9, 1987

PROJECT: Weyerhaeuser Chlorine Project

WORK ORDER #: 87717

Analytical Report

Sample Name	Lab Code	Mercury mg/L	Duplicate	Spike Level	% Recovery
M-1 A mw-1	717-1	<0.0002	<0.0002	0.001	101%
M-1 B "	717-2	<0.0002			
M-1 C "	717-3	<0.0002			
M-1 D "	717-4	<0.0002			
M-2 A mw-4	717-5	0.027			
M-2 B "	717-6	0.031			
M-2 C "	717-7	0.025			
M-2 D "	717-8	0.030			
M-3 A mw-2	717-9	<0.0002			
M-3 B "	717-10	<0.0002			
M-3 C "	717-11	<0.0002			
M-3 D "	717-12	0.0002			
M-4 A mw-3	717-13	<0.0002			
M-4 B "	717-14	<0.0002			
M-4 C "	717-15	<0.0002			
M-4 D "	717-16	<0.0002			
111-5 Transfer	717-17	0.0004			

Approved by: Mike Shelton Date: 11/9/87

Columbia Analytical Services, Inc.

1152 3rd Avenue • Longview, WA 98632 • (206) 577-7222

January 18, 1988

Jim Morales
Sweet & Edwards
P.O. Box Drawer B
Kelso, WA 98626

RE: Chlorine Plant

Dear Jim:

Listed below are the results of samples submitted to our lab on January 12, 1988. For your reference, our service request number for this work is 88026.

Please call if you have any questions.

Analytical Report

Sample Name:	Lab Code	pH	Conductivity umhos/cm	Mercury mg/L
MW-1/W1+W2	026-1	7.1	740	0.0005
MW-2/W1+W2	026-2	10.2	3638	0.0120
MW-3/W1+W2	026-3	5.5	5	0.0009
MW-4/W1+W2	026-4	6.4	63000	0.002
MW-5/W1+W2	026-5	6.2	283800	0.003

Respectfully submitted:
COLUMBIA ANALYTICAL SERVICES, INC.

Mike Shelton

Mike Shelton

Columbia Analytical Services, Inc.

1152 3rd Avenue • Longview, WA 98632 • (206) 577-7222

April 7, 1988

Craig Wells
Sweet & Edwards
P.O. Drawer B
Kelso, WA 98626

RE: Chlorine Plant; CAS Work Order # 88196

Dear Craig:

Listed below are the results of samples submitted to our lab on March 7, 1988. For your reference, our service request number for this work is 88196.

Please call if you have any questions.

Respectfully submitted:
COLUMBIA ANALYTICAL SERVICES, INC.

Mike Shelton

Mike Shelton

COLUMBIA ANALYTICAL SERVICES, INC.
1152 3RD AVE. LONGVIEW, WA 98632
(206) 577-7222

CLIENT: Sweet & Edwards/Emcon
--Craig Wells

April 7, 1988

PROJECT: Weyerhaeuser Chlorine Plant

WORK ORDER #: 88196

Analytical Report

Sample Name	Lab Code	pH	Conductivity umhos/cm	Mercury mg/L
W-1	196-1	6.3	49000	<0.0008
W-2	196-2	6.7	890	<0.0008
W-3	196-3	10.7	7320	0.012
W-4	196-4	7.5	4.9	<0.0008
W-5	196-5	5.2	474000	<0.0008

Approved by: Mike Pelton Date: 4/7/88

Columbia Analytical Services, Inc.

1152 3rd Avenue • Longview, WA 98632 • (206) 577-7222

May 20, 1988

Jim Morales
Sweet - Edwards/Emcon
P.O. Drawer B
Kelso, WA 98626

RE: Weyerhaeuser Chlorine Plant

Dear Jim:

Enclosed are the results of samples submitted to our lab on May 10, 1988. For your reference, our service request number for this work is 88406.

Please call if you have any questions.

Respectfully submitted:
COLUMBIA ANALYTICAL SERVICES, INC.

Carol Duplaga
Carol Duplaga

COLUMBIA ANALYTICAL SERVICES, INC.
1152 3RD AVE. LONGVIEW, WA 98632
(206) 577-7222

CLIENT: Sweet - Edwards/Emcon
--Jim Morales

May 20, 1988

PROJECT: Weyerhaeuser Chlorine Plant

WORK ORDER #: 88406

Analytical Report

Sample Name	Lab Code	pH	Conductivity umhos/cm	Mercury mg/L
WC-588-W-1	406-1	7.0	720	<0.0002
WC-588-W-2	406-2	6.5	38440	<0.0008
WC-588-W-3	406-3	9.3	3200	0.0026
WC-588-W-4	406-4	7.9	852	<0.0002
WC-588-W-5	406-5	6.9	448000	<0.0008
WC-588-W-6	406-6	8.4	228	<0.0002
WC-588-W-7	406-7	8.0	202	<0.0002
WC-588-W-8	406-8	7.7	3	<0.0002
WC-588-W-9	406-9	6.9	204	<0.0002
WC-588-W-10	406-10	6.9	750	<0.0002
WC-588-W-11	406-11	6.4	37060	<0.0008
WC-588-W-12	406-12	9.3	3200	0.0026
WC-588-W-13	406-13	7.8	830	<0.0002
WC-588-W-14	406-14	6.8	492000	<0.0008
WC-588-W-15	406-15	8.0	224	<0.0002
WC-588-W-16	406-16	7.8	204	<0.0002
WC-588-W-17	406-17	7.6	2	<0.0002
WC-588-W-18	406-18	6.9	208	<0.0002

Approved by: C Duglaga Date: 5/19/88

Weyerhaeuser Paper Company

Longview, Washington 98632
(206) 425-2150

May 25, 1988

Craig Wells
Sweet Edwards/Emcon, Inc.
P.O. Drawer 8
Kelso, WA 98626

Dear Craig:

Attached is a copy of the WTC analysis of ground and surface waters collected on May 9 in the vicinity of our Chlor-Alkali plant.

Sincerely,

Ken

Ken Johnson

ANALYTICAL LABORATORY SERVICES REQUEST

Weyerhaeuser Research and Development – Scientific Services

REQUEST NO. 17442 | UNIT CODE

(9) LONGVIEW CHLOR-ALKALI PLANT WATER SAMPLES #005439 JDC

NUMBER OF SAMPLES 9 | PRIORITY

PROJECT NUMBER 046560 1 | TASK

DATE RECEIVED Mo. 05 Day 11 Yr. 88

EST. START DATE Mo. Day Yr.

SUBMITTED BY Ken Johnson

DATE DESIRED Mo. 06 Day 08 Yr. 88

EST. COMPLETION DATE Mo. Day Yr.

LOCATION/SORT Longview 43

TELEPHONE 425-5021

EST. COST $

SECTION
Environmental Mgr. x6452: 1 ☐ 2 ☐ 3 ☒ 4 ☒
Spectrometry & Gen. Mgr. x6148: 5 ☐ 6 ☐ 7 ☐ 8 ☐

Grayed area for analytical use only.

NAME OF TEST OR METHOD	Expected Report Range %	PPM	PPB	REPORT BASIS *	LOWER LIMIT SENSITIVITY
	☐	☐	☒		
	☐	☐	☐		
Hg, Conductivity(?), pH(?)	☐	☐	☒		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		

*Indicate volume or weight basis on O.D. or as received sample, etc.

SPECIAL HANDLING
☐ Keep Chilled ☐ Keep Frozen
☐ Other

PRESERVATIVE ADDED
☐ No Kind
☐ Yes Amount

Submit request & samples to:
SAMPLE RECEIVING
Ship – WTC Lab 233S
Mail – Sort WTC 2E25
Phone ext. 6293

Refer questions to above extension or to Manager of section work is assigned.

SAMPLE DESCRIPTION AND HISTORY
(Include potential hazards)

Chlor-Alkali Plant Groundwater/surface water

Charge # 005439

ANALYTICAL LAB CODE	SAMPLE DESIGNATION	PROPERTIES TO BE EVALUATED	ANALYTICAL LAB CODE	SAMPLE DESIGNATION	PROPERTIES TO BE EVALUATED
09649	WC-5-88-W-1	Hg, Cond?, pH?			
09650	W-2				
09651	W-3				
09652	W-4				
09653	W-5				
09654	W-6				
09655	W-7				
09656	W-8				
09657	W-9				

Questions? Please Contact:
Jeff Christian Ext. 6013

INTERIM REPORT DESIRED ☐ No ☐ Yes

NOTE: Use additional sheets if necessary

REFERENCES

RECORD BOOK

RESULTS APPROVED Jeff Christian

DATE 5-19-88

SIGNATURE Applies to attached pages

PAGE NUMBER

FORM 1900 10/86 2300 PRINT SHOP/TACOMA

WEYERHAEUSER ANALYTICAL LABORATORIES
ATOMIC SPECTROSCOPY

SR17442
LONGVIEW CHLOR-ALKALI PLANT WATER
TOTAL HG

SAMPLE I.D.	LAB CODE	HG (ug/L)
WC-5-88-W-1	09649	<.2
WC-5-88-W-2	09650	<.3
WC-5-88-W-3	09651	2.0
WC-5-88-W-4	09652	<.2
WC-5-88-W-5	09653	<.5
WC-5-88-W-6	09654	<.2
WC-5-88-W-7	09655	<.2
WC-5-88-W-8	09656	<.2
WC-5-88-W-9	09657	.2

NOTE: Detection limits vary from sample to sample due to the varying salt content.

DUPLICATE AND SPIKE RESULTS:

SAMPLE I.D.	LAB CODE	SAMPLE (Hg, ug/L----------)	DUP.	SPIKE	NET SPIKE	SPIKE LEVEL	% REC.
WC-5-88-W-1	09649	<.2	-	2.0	2.0	2.0	100
WC-5-88-W-2	09650	<.3	<.3	8.5	8.5	10.	85
WC-5-88-W-5	09653	<.5	<.5	8.5	8.5	10.	85

Jeff Christian
5-19-88

Columbia Analytical Services, Inc.

1152 3rd Avenue • Longview, WA 98632 • (206) 577-7222

July 28, 1988

Craig Wells
Sweet - Edwards/Emcon
P.O. Drawer B
Kelso, WA 98626

RE: Weyco Chlorine Plant Project

Dear Craig:

Enclosed are the results of samples submitted to our lab on July 7, 1988. For your reference, our service request number for this work is 88581.

Please call if you have any questions.

Respectfully submitted:
COLUMBIA ANALYTICAL SERVICES, INC.

Mike Shelton

Mike Shelton

COLUMBIA ANALYTICAL SERVICES, INC.
1152 3RD AVE. LONGVIEW, WA 98632
(206) 577-7222

CLIENT: Sweet - Edwards/Emcon
--Craig Wells

July 28, 1988

PROJECT: Weyco Chlorine Plant

WORK ORDER #: 88581

Analytical Report

Sample Name	Lab Code	pH	Conductivity umhos/cm	Mercury mg/L
WC-788-W1	581-1	9.3	3,984	0.004
WC-788-W2	581-2	-	-	0.006
WC-788-W3	581-3	7.0	874	<0.001
WC-788-W4	581-4	6.7	398,000	<0.001
WC-788-W5	581-5	-	-	<0.0002
WC-788-W6	581-6	6.6	34,900	<0.001
WC-788-W7	581-7	-	-	<0.001
WC-788-W8	581-8	6.8	4	<0.0002
WC-788-W9	581-9	-	-	<0.0002

Approved by Mike Shelton Date 7/28/88

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE _____ PAGE 1 OF 1

PROJECT _____ #_____
CLIENT INFO.
CONTACT _____
ADDRESS _____
TELEPHONE# _____
SAMPLERS NAME _____ PHONE# _____
SAMPLERS SIGNATURE _____

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				

ANALYSIS REQUESTED

BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	GENERAL CHEMISTRY (Specify) pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	OTHER (Specify)							NUMBER OF CONTAINERS

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By
Signature	Signature	Signature
Printed Name	Printed Name	Printed Name
Firm	Firm	Firm
Date/Time	Date/Time	Date/Time
Received By	**Received By**	**Received By**
Signature	Signature	Signature
Printed Name	Printed Name	Printed Name
Firm	Firm	Firm
Date/Time	Date/Time	Date/Time

PROJECT INFORMATION
Shipping I.D. No.
VIA
Project

SAMPLE RECEIPT
Total No. of Containers
Chain of Custody Seals
Received in good condition
LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS

DISTRIBUTION: WHITE - return to originator YELLOW - lab: PINK - retained by originator

SEA-100.05

Columbia Analytical Services, Inc.

1152 3rd Avenue • Longview, WA 98632 • (206) 577-7222

August 12, 1988

Craig Wells
Sweet - Edwards/Emcon
P.O. Drawer B
Kelso, WA 98626

RE: "RUSH" Analyses of Weyco Chlorine Plant Project

Dear Craig:

Enclosed are the results of samples submitted to our lab on August 5, 1988. For your reference, our service request number for this work is 88684.

Please call if you have any questions.

Respectfully submitted:
COLUMBIA ANALYTICAL SERVICES, INC.

Carol Duplaga

Carol Duplaga

COLUMBIA ANALYTICAL SERVICES, INC.
1152 3RD AVE. LONGVIEW, WA 98632
(206) 577-7222

CLIENT: Sweet - Edwards/Emcon
--Craig Wells

August 12, 1988

PROJECT: "RUSH" Weyco Chlorine Plant

WORK ORDER #: 88684

Analytical Report

Sample Name	Lab Code	pH	Conductivity umhos/cm	Mercury mg/L
WC-888-W1	684-1	6.2	8740 MW-2	<0.001 <.0002
WC-888-W2	684-2	10.4	368 MW-4	0.018
WC-888-W3	684-3	7.5	886 ? MW-1	<0.001 <.0002
WC-888-W4	684-4	6.2	2960 ? MW-3	<0.001 <.0009
WC-888-W6	684-5	-	- MW-1	<0.001 <.0002
WC-888-W7	684-6	-	- MW-4	0.021
WC-888-W8	684-7	9.1	318 Transfer	<0.001 <.0002
WC-888-W9	684-8	-	-	<0.001 <.0009
WC-888-W10	684-9	-	-	<0.001 <.0002

Approved by C Duplaga Date 8/12/88

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE 8.5.88 PAGE [redacted] OF [redacted]

PROJECT Wey. Co. Chlorine #
CLIENT INFO. CONTACT Craig Wells
ADDRESS
TELEPHONE#
SAMPLERS NAME Graham Martyn PHONE#
SAMPLERS SIGNATURE

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	GENERAL CHEMISTRY (Specify) pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	OTHER (Specify)	[redacted]	[redacted]	[redacted]	[redacted]	NUMBER OF CONTAINERS
1. WC-888-W1	8.5.88	see bottles		H_2O									X		X								2
2. WC-888-W2													X		X								2
3. WC-888-W3													X		X								2
4. WC-888-W4													X		X								2
5. WC-888-W6													X										1
6. WC-888-W7													X										1
7. WC-888-W8 WC-888-W9													X X		X								2
8. WC-888-W10													X										1

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By	PROJECT INFORMATION	SAMPLE RECEIPT
Signature GRAHAM MORTYN	Signature	Signature	Shipping I.D. No.	Total No. of Containers
Printed Name S-E/E	Printed Name	Printed Name	VIA	Chain of Custody Seals
Firm 8.5.88 1324	Firm	Firm	Project	Received in good condition
Date/Time	Date/Time	Date/Time		LAB NO.
Received By BURMS	Received By	Received By	SPECIAL INSTRUCTIONS/COMMENTS	
Signature	Signature	Signature	no WC-888-W5	
Printed Name	Printed Name	Printed Name	* Hg	
Firm	Firm	Firm		
Date/Time	Date/Time	Date/Time		

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; P[redacted] - retained by originator.

A-400-05

Columbia Analytical Services, Inc.
1152 3rd Avenue • Longview, WA 98632 • (206) 577-7222

October 7, 1988

Craig Wells
Sweet - Edwards/Emcon
P.O. Drawer B
Kelso, WA 98626

RE: Re-issue of CAS Work Order # 88684

Dear Craig:

Enclosed is a revised report of our Service Request No. 88684. The mercury results reflect individual detection limits. Also, the pH and conductivity results have been corrected. We are sorry if this has inconvenienced you in any way.

Please call if you have any questions.

Respectfully submitted:
COLUMBIA ANALYTICAL SERVICES, INC.

Carol Duplaga
Carol Duplaga

COLUMBIA ANALYTICAL SERVICES, INC.
1152 3RD AVE. LONGVIEW, WA 98632
(206) 577-7222

CLIENT: Sweet - Edwards/Emcon --Craig Wells
October 7, 1988

PROJECT: "Re-Issue"; Weyco Chlorine Plant
WORK ORDER #: 88684

Analytical Report

Sample Name	Lab Code	pH	Conductivity umhos/cm	Mercury mg/L
WC-888-W1	684-1	7.6	39,000	<0.0002
WC-888-W2	684-2	10.4	11,500	0.018
WC-888-W3	684-3	8.7	876	<0.0002
WC-888-W4	684-4	7.7	576,000	<0.0009
WC-888-W6	684-5	-	-	<0.0002
WC-888-W7	684-6	-	-	0.021
WC-888-W8	684-7	6.9	54	<0.0002
WC-888-W9	684-8	-	-	<0.0009
WC-888-W10	684-9	-	-	<0.0002

Approved by C Duplaga Date 10/7/88

Weyerhaeuser Company

March 28, 1988

Michael J. Spencer
Hazardous Waste Clean-up Program
Department of Ecology
MS PV-11
Olympia, WA 98504

Dear Mr. Spencer:

Re: Chlor-Alkali Mercury Investigation

The joint Washington Department of Ecology and EPA site investigation report concerning the residual mercury contamination issue at Weyerhaeuser's Longview Chlor-Alkali plant was issued in February 1987. This report included requests for additional information and site characterization before the WDOE would recommend the site for removal from the CERCLIS list of active hazardous waste sites, and place it on the EPA list of sites requiring no further action.

In the late spring, 1987, a work plan was developed which addressed those additional agency information needs. Your review and comment on this work plan (Re. your May 27, 1987 letter) provided additional guidance for its implementation.

During the past 9 months, a number of the work tasks have been completed. The data from these are included in the attachment listed below.

1. "Weyerhaeuser Paper Company Chlorine Plant - Longview Mill Site - Soil and Groundwater Investigation Status Report", Sweet-Edwards/Encom, Inc., February 10, 1988. This report describes the installation of 4 shallow groundwater monitoring wells on the "West Site". Groundwater sampling and analytical data from 4 periods are reported. During well installation soil samples were collected at 2 1/2 foot depth intervals to the maximum boring depth. Analysis on these soil samples for total and EP-toxicity mercury concentrations has occured and these data are presented. All anlalytical work was completed by Columbia Analytical Services, Inc. in Kelso, Washington.

2. Surface Water and Sediment Sampling Along Columbia River - Following the receipt of test data on the August 5, 1987 groundwater samples which showed the presence of mercury above MCL's in wells MW-3 and MW-4, an effort was made to assess possible mercury loss to the Columbia River. On September 3, 1987, three shallow hand auger holes were excavated along the Columbia River shoreline a few feet from the waters edge. The sampling points are located between the boat launching ramp and the Reynolds Metal Company property boundary. The holes were excavated to a depth of 5 feet, and one soil sediment sample was collected from each hole and analyzed for total mercury concentration. One of the three samples was analyzed using EP-toxicity test methods. A peristaltic pump was used to obtain one water sample from each borehole. These samples were also analyzed for total mercury concentration. This sampling was completed by Sweet-Edwards/Encom personnel and analytical work by Columbia Analytical Services. A site plan showing the sample locations and a data table displaying analytical results are included as attachment 2.

3. East Site Expanded Soils Assessment - In an effort to further characterize the extent of any residual mercury contamination of the East Site area additional soil samples were collected. Those included:
   a. Depth integrated samples of 7 locations which coincide with the sites of the former brine sludge ponds. These ponds were cleaned and backfilled with clean sand in the mid-1970's. Through backhoe excavation, soil samples were collected from each visually different strata, or at least 3 depths (2, 5, and 10 feet.)
   b. Bottom sediment samples a 2 locations along the stormwater drainage ditch adjacent to the northeast corner of the old chlorine plant cell room building.

   These 9 samples were collected by Weyerhaeuser personnel and split for possible duplicate analysis by the WDOE. The Weyerhaeuser samples were analyzed at the Weyerhaeuser Technology Center Analytical Laboratory in Federal Way, Wasington. Both total and EP-toxicity mercury concentration tests were performed. A site drawing showing sample locations and a data table displaying test results are enclosed as attachment 3

Remaining work to be accomplished under the work plans is simply the continuation of bimonthly groundwater monitoring through July 1988. During the May, 1988 monitoring, surface water and sediment sampling along the Columbia River will be repeated.

Feel free to contact me with any questions you might have on this information.

Sincerely,

Ken Johnson

KJaDeMl

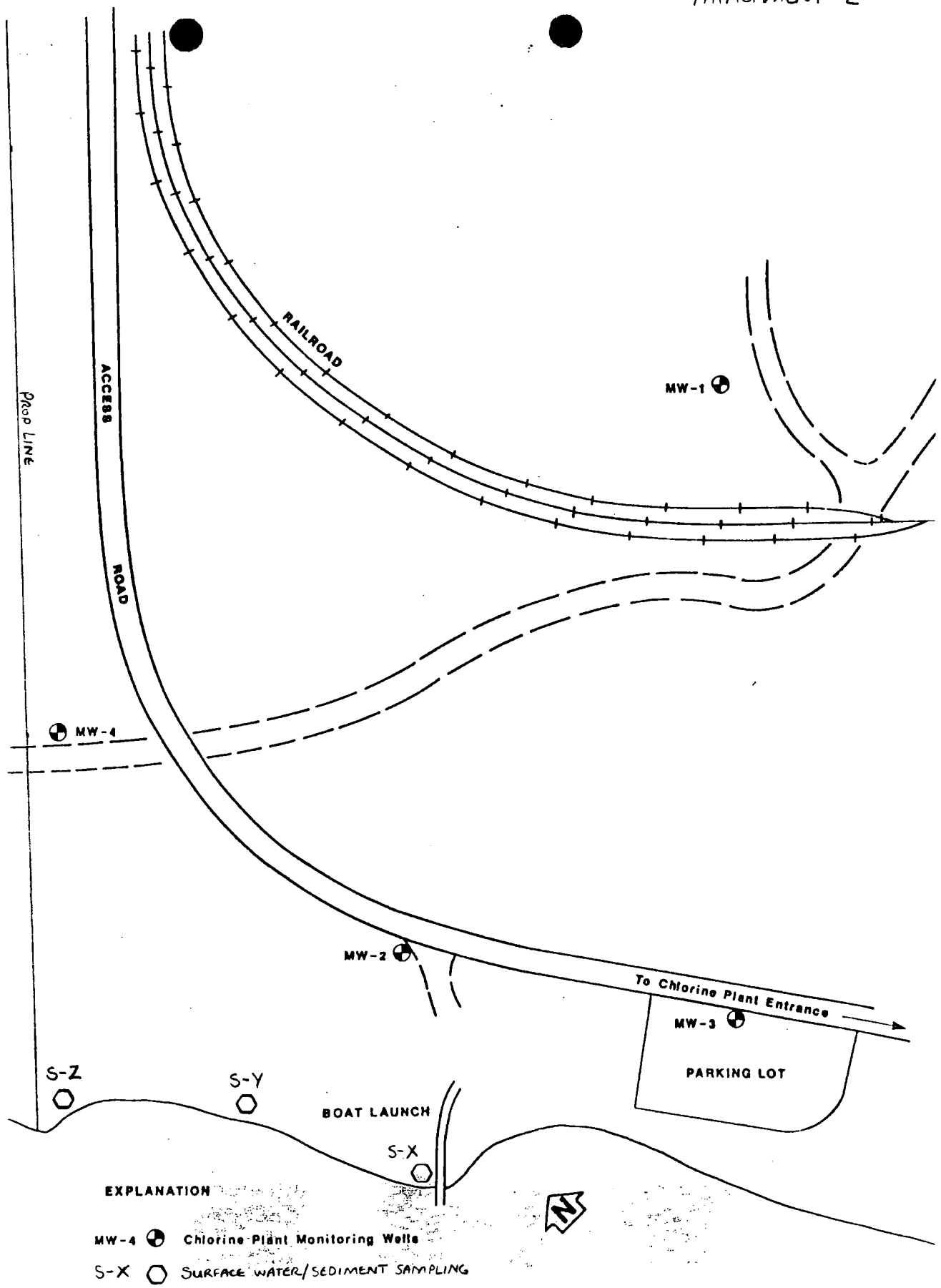
Attachment 2

WEYERHAEUSER - LONGVIEW CHLOR ALKALI PLANT
SURFACE AND SEDIMENT SAMPLING ALONG COLUMBIA RIVER

September 3, 1987

LOCATION	SOIL QUALITY DATA TOTAL(mg/kg)	EPTOX (mg/l)	WATER QUALITY DATA TOTAL (mg/l)
S - X	< 0.2	---	< 0.005
S - Y	< 0.2	---	< 0.005
S - Z	<0.2	<0.0005	< 0.005

ATTACHMENT 2



WEYERHAEUSER CHLORINE PLANT

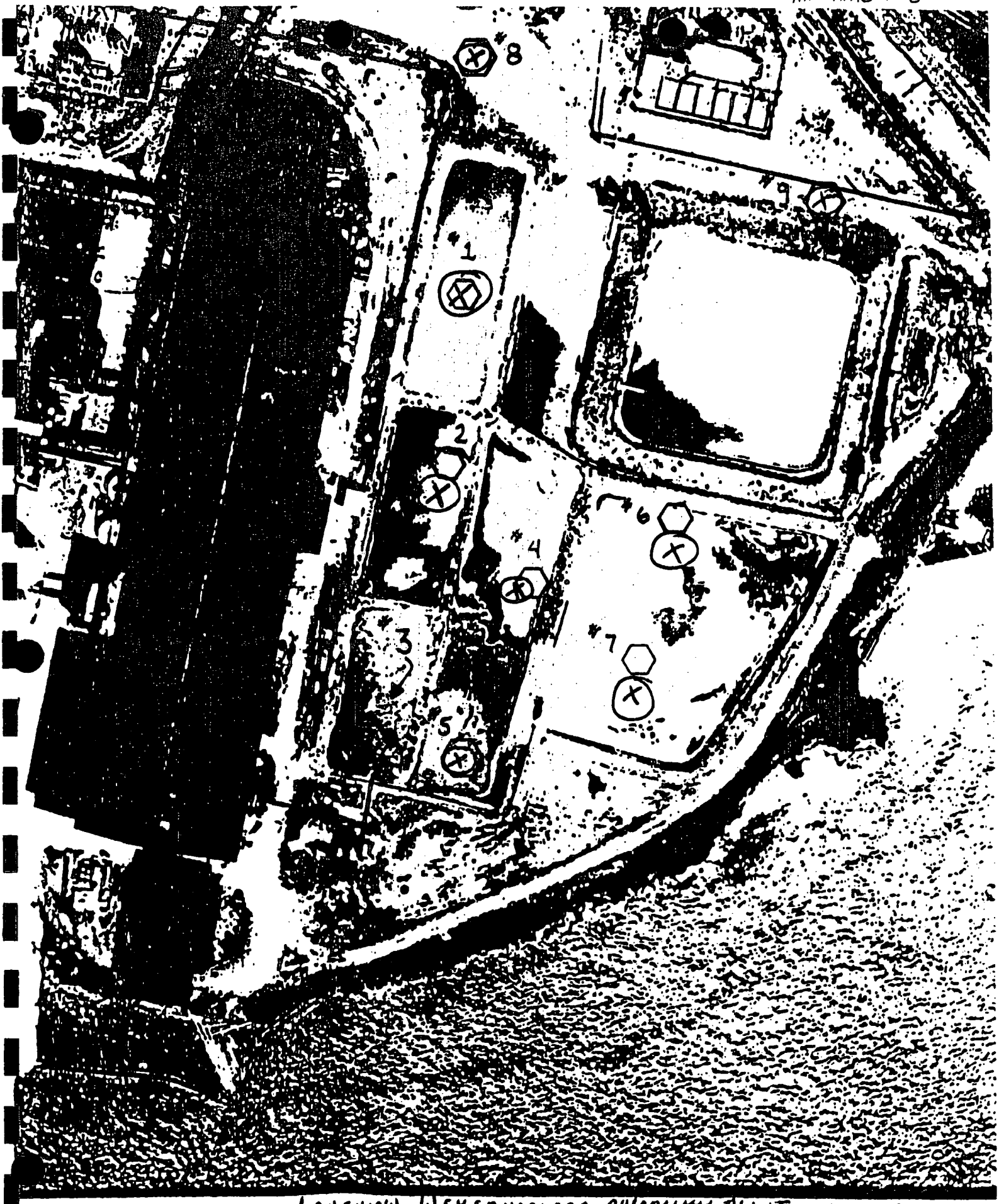
Monitoring Well Locations

Sweet-Edwards / EMCON, Inc.

	INITIALS	DATE
DRAWN BY	[illegible]	2/3/88
CHECKED BY	[illegible]	2/12/88
REVISED		

Figure 1

ATTACHMENT 3



LONGVIEW WEYERHAEUSER CHLORALKOH PLANT – CIRCA 1970
PRIOR TO BRINE POND REMOVAL.

⊗ = PROPOSED SOIL AND DITCH SAMPLING LOCATIONS
⬡ = ACTUAL SOIL AND DITCH SAMPLING LOCATIONS - JUNE 16, 1987

ANALYTICAL LABORATORY SERVICES REQUEST

Weyerhaeuser Research and Development – Scientific Services

REQUEST NO. 15719 | UNIT CODE

LONGVIEW CHLORALKALI SOIL SAMPLES

JDC

NUMBER OF SAMPLES 23 | PRIORITY

PROJECT NUMBER 044-3001 | TASK

DATE RECEIVED Mo. 06 Day 18 Yr. 87

EST. START DATE Mo. Day Yr.

SUBMITTED BY Jim Fisher

DATE DESIRED Mo. 07 Day 15 Yr. 87

EST. COMPLETION DATE Mo. Day Yr.

LOCATION/SORT WTC-1A2

TELEPHONE 6825

EST. COST $

SECTION
Environmental Mgr. x6452: 1 ☐ 2 ☐ 3 ☒ 4 ☐
Spectrometry & Gen. Mgr. x6148: 5 ☐ 6 ☐ 7 ☐ 8 ☐

Grayed area for analytical use only.

NAME OF TEST OR METHOD	Expected Report Range %	PPM	PPB	REPORT BASIS *	LOWER LIMIT SENSITIVITY
TOTAL MERCURY	☐	☐	☑		
	☐	☐	☐		
EP-TOX. MERCURY	☐	☐	☑		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		

*Indicate volume or weight basis on O.D. or as received sample, etc.

SPECIAL HANDLING
☒ Keep Chilled ☐ Keep Frozen
☐ Other

PRESERVATIVE ADDED
☐ No Kind
☐ Yes Amount

Submit request & samples to:
SAMPLE RECEIVING
Ship – WTC Lab 233S
Mail – Sort WTC 2E25
Phone ext. 6293

Refer questions to above extension or to Manager of section work is assigned.

SAMPLE DESCRIPTION AND HISTORY (Include potential hazards)
SOIL SAMPLES FROM AREA NEAR THE OLD BRINE PONDS AT LV. CHLORALKALI PLANT - FOR Residual Hg^{++}

ANALYTICAL LAB CODE	SAMPLE DESIGNATION	PROPERTIES TO BE EVALUATED	ANALYTICAL LAB CODE	SAMPLE DESIGNATION	PROPERTIES TO BE EVALUATED
95923	1-2		95938	6-2	
95924	1-5		95939	6-5	
95925	1-10		95940	6-10	
95926	2-2		95941	7-2	
95927	2-5		95942	7-5	
95928	2-10		95943	7-10	
95929	3-2		95944	8 Upper ditch	
95930	3-5		95945	9 Lower ditch	
95931	3-10				
95932	4-2				
95933	4-5				
95934	4-10				
95935	5-2				
95936	5-5				
95937	5-10				

INTERIM REPORT DESIRED ☐ No ☐ Yes

NOTE: Use additional sheets if necessary

REFERENCES

RECORD BOOK #

RESULTS APPROVED

DATE 7-22-87

SIGNATURE Applies to attached pages

PAGE NUMBER

FORM 1508 10/82 2306 PRINT SHOP/TACOMA

Attachment 3

Weyerhaeuser Longview Chlor-Alkali Plant
East Side Sampling Study
June 16, 1987

SOIL SAMPLE LOCATIONS

Site No.(See Map)	Sample ID	Sample Depth (ft)	Strata
1	1-2	2	Sand fill
	1-5	5	Brown Pea Gravel
	1-10	10	Black Fine Soil/ Sand
2	2-2	2	Sand Fill
	2-5	5	Brown Pea Gravel
	2-10	10	Black Fine Soil/ Sand
3	3-2	2	Sand Fill
	3-5	5	Brown Pea Gravel
	3-10	10	Black Fine Soil/ Sand
4	4-2	2	Brown Sand/small gravel
	4-5	5	Sand fill
	4-20	10	Blk organic sand wood chips
5	5-2	2	Gray sand
	5-5	5	Gray fine sand
	5-10	10	Dark gray find sand, banding
6	6-2	2	Gray sand
	6-5	5	Gray clay, fine sand
	6-10	10	Gray clay fnsnd
7	7-2	2	Gray sand
	7-5	5	Gray clay, fine sand
	7-10	10	Gray clay, fine sand

DITCH SAMPLES

8	8 UPPER DITCH NEAR OLD CELL ROOM
9	9 LOWER DITCH

WEYERHAEUSER TECHNOLOGY CENTER
Analytical Laboratories
Tacoma, Washington

0.02 mg/l
20 ug/l

REPORT

Service Request 15719

Page ____ of ____

LONGVIEW CHLORALKALI
SOIL SAMPLES

Lab code	sample I.D.		Hg EP. TOX.		Hg TOTAL	
			ug/L		ug/g, O.D.	
95923 A	1-2		<0.2		5.5	
↓ B	↓		<0.2		7.7	
924	1-5		0.28		4.9	
925	1-10		<0.2		34.	
926	2-2		<0.2		0.084	
927	2-5		0.88		1.5	
928	2-10		0.46		0.32	
929	3-2		0.36		3.8	
930	3-5		<0.2		1.6	
931	3-10		0.72		1.9	
932	4-2		0.36		5.3	
933 A	4-5		8.2		8.0	
↓ B	↓		8.0		8.3	
934	4-10		<0.2		2.3	
935	5-2		<0.2		1.7	
936	5-5		<0.2		0.40	
937	5-10		<0.2		0.31	
938	6-2		<0.2		0.097	
939	6-5		0.28		1.7	
940	6-10		0.46		0.39	
941	7-2		<0.2		36	
942	7-5		<0.2		10.	
943	7-10		<0.2		0.66	
944	8 UPPER DITCH		0.28		15.	
↓ 945	9 LOWER DITCH		<0.2		35.	

Approved [signature] Date 7-22-87 Notebook ____

Page Number ____

FORM 4700-2 10/79 PRINT SHOP/TACOMA

WEYERHAEUSER TECHNOLOGY CENTER
Analytical Laboratories
Tacoma, Washington

REPORT

Service Request 15719

Page ____ of ____

LONGVIEW CHLORALKALI
SOIL SAMPLES

Lab code		Average	Spike	Net Spike	Spike Level	% Recovery
		ug/L →			→	
95923	Hg EP.TOX.	<0.2	2.0	2.0	2.0	100
95933	↓	8.1	10.2	2.1	2.0	105
		ug/g, O.D. →			→	
95923	Hg TOTAL	6.6	12.	5.4	5.4	100
95933	↓	8.2	12.	38	6.2	61

Approved [signature] Date 7-22-87 Notebook ____

Page Number ____

FORM 4700-4 10/79 PRINT SHOP/TACOMA

WEYERHAEUSER PAPER COMPANY

CHLORINE PLANT - LONGVIEW MILL SITE

SOIL AND GROUND WATER INVESTIGATION

STATUS REPORT

February 10, 1988

SUBMITTED TO:

Weyerhaeuser Paper Company
Longview Mill Site
Longview, WA 98632

SUBMITTED BY:

Sweet-Edwards/EMCON, Inc.
P.O. Drawer B
Kelso, WA 98626

S4101.02

WEYCO-R.210LK

WEYERHAEUSER PAPER COMPANY
CHLORINE PLANT - LONGVIEW MILL SITE
TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES
(following text)

WEYERHAEUSER PAPER COMPANY
CHLORINE PLANT - LONGVIEW MILL SITE
SOIL AND GROUND WATER INVESTIGATION

1.0 BACKGROUND AND PURPOSE

Previous investigations by Weyerhaeuser have shown that there are low concentrations of mercury in the shallow soils near the salt storage piles west of the chlorine plant. The purposes of this investigation are to: 1) further define the extent of mercury soil contamination, and 2) determine the extent of mercury ground water contamination, if present.

2.0 FIELD WORK

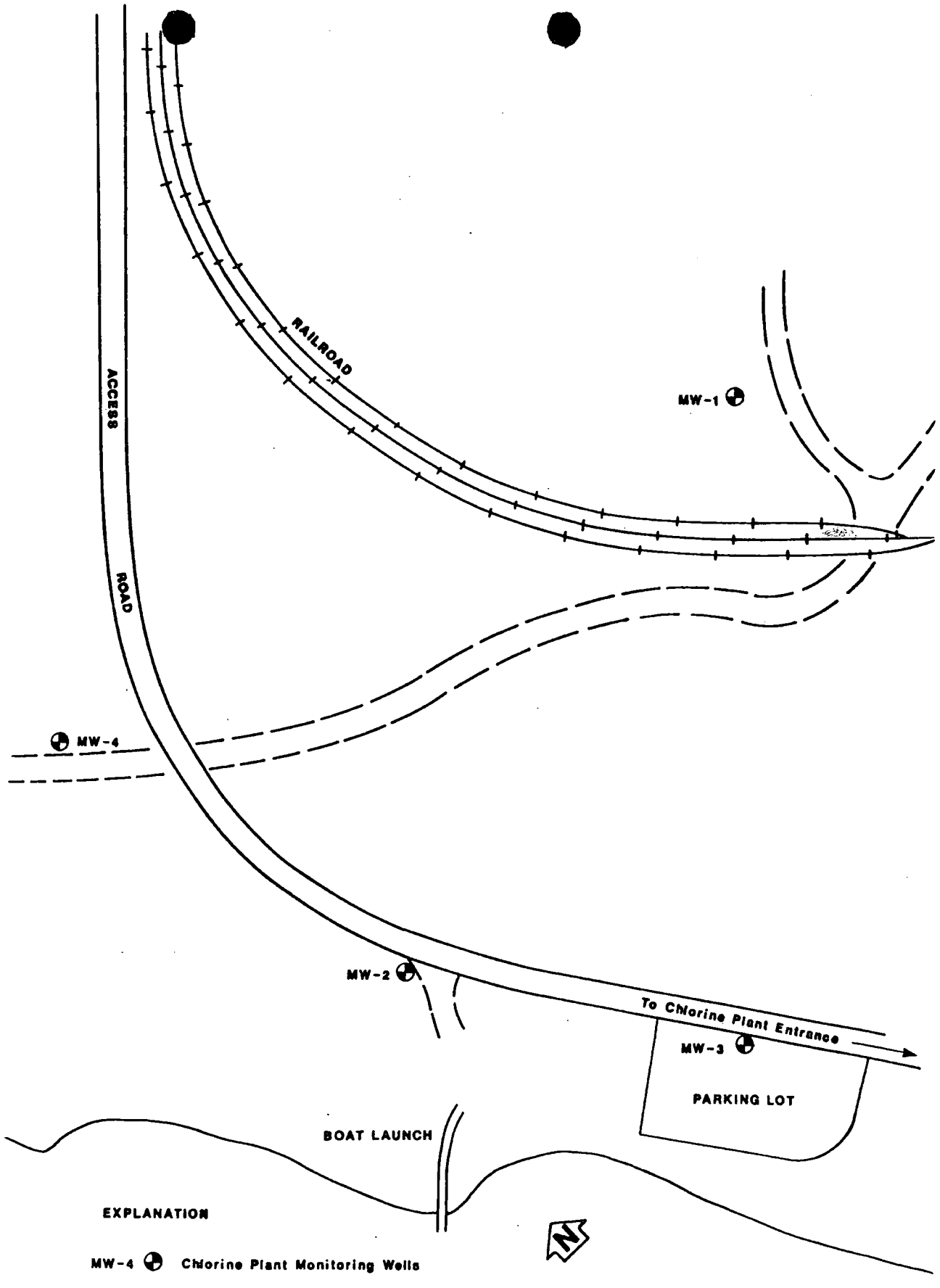
Field work at the site began in July 1987. Work completed to date included the installation of four monitoring wells, ground water sampling, and laboratory testing. Sampling of the wells will be completed every other month for one year.

2.1 MONITORING WELL INSTALLATION

Four monitoring wells were installed at the locations shown on Figure 1. Monitoring wells MW-1, MW-2, and MW-3 were first installed to obtain ground water elevation data. The shallow ground water flow direction was calculated from this data and used to select a downgradient location for well MW-4.

Wells were installed using a CME 75 drill rig with 6-inch I.D. hollow stem auger. Soil samples were taken every 2 1/2 feet to the maximum boring depth of 20 1/2 to 26 1/2 feet below ground surface (see well logs, Appendix A). The samples were later submitted for laboratory testing, as listed on Table 1.

Upon completion of the boring, monitoring wells were constructed with 2-inch diameter schedule 80 PVC screen and casing (Figure 2). The screened section consists of 15 feet of factory milled PVC with 0.010-inch slots. All joints are flush threaded to avoid water quality effects from the use of solvent cements. An annular filter pack of Aqua 8 Monterey sand was installed from the bottom of the borehole to approximately 1 to 2 feet above the top of the screen. The remaining annular space around each well was filled with bentonite chips which provide an annular seal. A locked steel security casing set in a shallow concrete pad was installed over each monitoring well (see Figure 3).



WEYERHAEUSER CHLORINE PLANT

Monitoring Well Locations

Sweet-Edwards / EMCON, Inc.

	INITIALS	DATE
DRAWN BY	[illegible]	2/5/88
CHECKED BY	[illegible]	2/9/88
REVISED		

Figure 1

TABLE 1
SOIL AND GROUND WATER
SAMPLE SUMMARY

LOCATION DESIGNATION	SAMPLE DATE(S)	SAMPLE DEPTH (ft.)
	WATER	
MW-1	8-5-87	10-19.5
	9-3-87	10-19.5
	11-4-87	10-19.5
	1-12-88	10-19.5
MW-2	8-5-87	10-20
	9-3-87	10-20
	11-4-87	10-20
	1-12-88	10-20
MW-3	8-5-87	10-20
	9-3-87	10-20
	11-4-87	10-20
	1-12-88	10-20
MW-4	8-5-87	14-24
	9-3-87	14-24
	11-4-87	14-24
	1-12-88	14-24
	SOIL	
MW-1	7-20-87	2.5-4
	7-20-87	5-6.5
	7-20-87	7.5-9
	7-20-87	10-11.5
	7-20-87	12.5-14
	7-20-87	15-16.5
	7-20-87	17.5-19
	7-20-87	20-21.5
MW-2	7-21-87	2.5-4
	7-21-87	5-6.5
	7-21-87	7.5-9
	7-21-87	10-11.5
	7-21-87	12.5-14
	7-21-87	15-16.5
	7-21-87	17.5-19
	7-21-87	20-21.5

LOCATION DESIGNATION	SAMPLE DATE(S)	SAMPLE DEPTH (ft.)
	SOIL, continued	
MW-3	7-21-87	2.5-4
	7-21-87	5-6.5
	7-21-87	7.5-9
	7-21-87	10-11.5
	7-21-87	12.5-14
	7-21-87	15-16.5
	7-21-87	17.5-19
	7-21-87	20-21.5
MW-4	7-23-87	2.5-4
	7-23-87	5-6.5
	7-23-87	7.5-9
	7-23-87	10-11.5
	7-23-87	12.5-14
	7-23-87	15-16.5
	7-23-87	17.5-19
	7-23-87	20-21.5
	7-23-87	22.5-24
	7-23-87	25-26.5

SINGLE COMPLETION MONITORING WELL

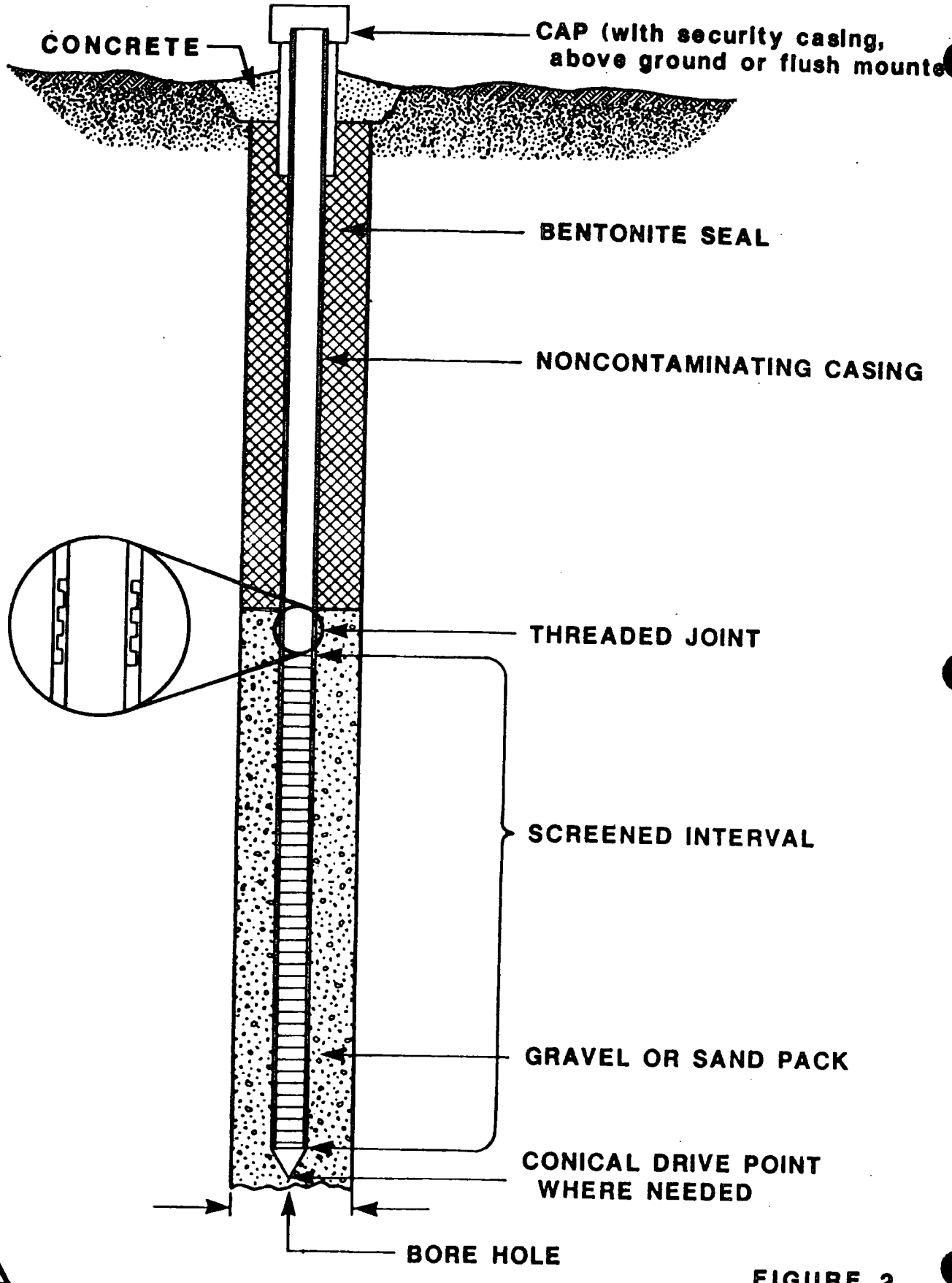


FIGURE 2

Sweet, Edwards & Associates, Inc. • P.O. Box 328 • Kelso, WA 98626

Revised Date:
2/23/87

MONITORING WELL SECURITY CASING

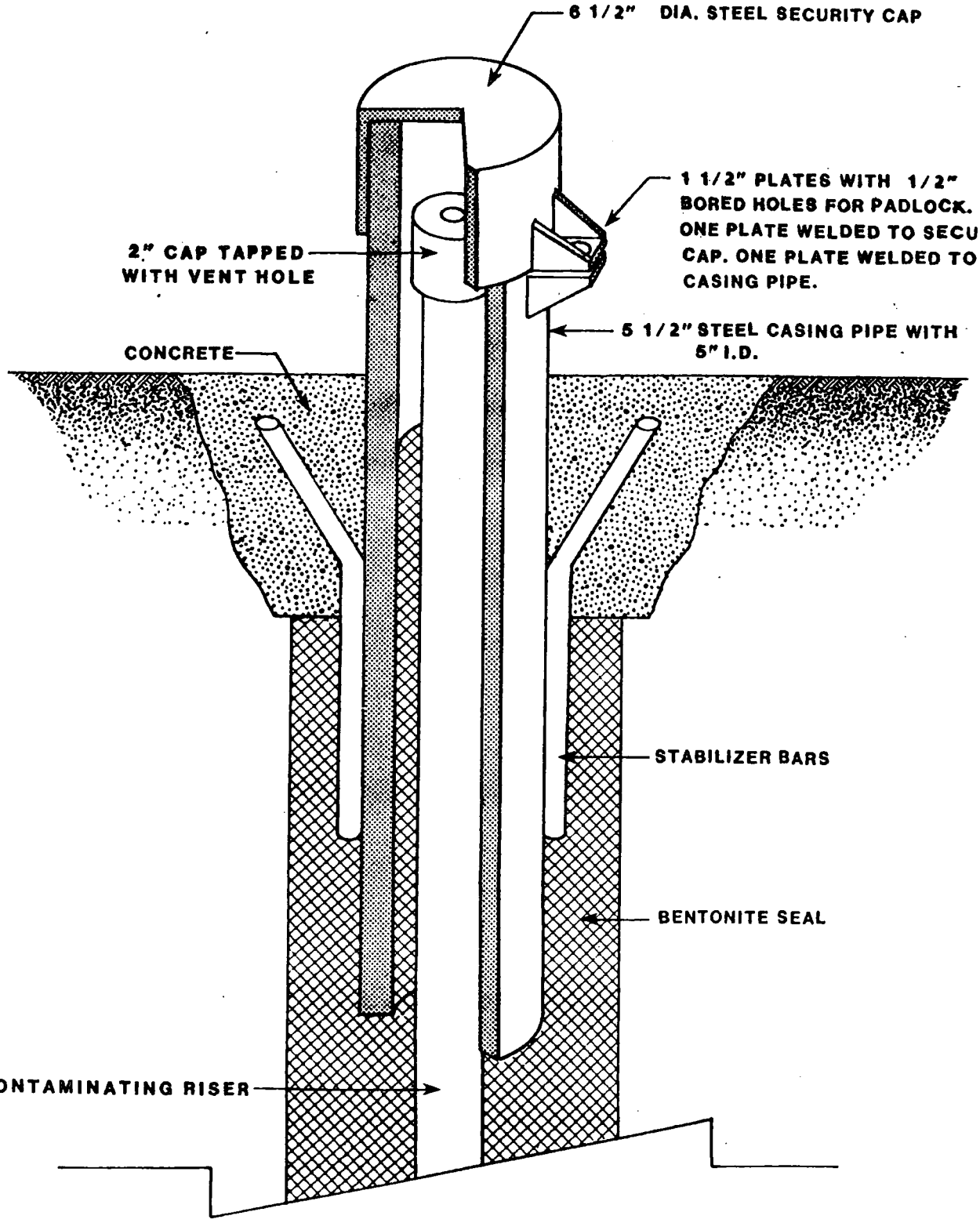


FIGURE 3

Sweet, Edwards & Associates, Inc. • P.O. Box 328 • Kelso, WA 98626

Revised Date
6/17/85

Following installation, the monitoring well screens were developed by bailing and pumping to remove fine sediments and maximize hydraulic connection between the annular sand pack and the formation. Screen development continued until discharge water was essentially sediment free.

2.2 GROUND WATER SAMPLING

The monitoring wells have been sampled four times since the wells were completed (see Table 1). Wells are purged and sampled using a peristaltic pump connected to polyethylene tubing dedicated to each well. Samples are collected in bottles provided by the contract laboratory (Columbia Analytical Services). Prior to sampling, each well is purged until a minimum of three pore volumes have been removed and field pH and/or conductance stabilized (+10%).

The field water quality data and sampling procedures are recorded on the Field Sampling Data Forms (see Appendices B-1 through B-4). Upon completion of sampling, all samples are delivered to the contract laboratory where custody is transferred (see Chain of Custody Forms, Appendix C).

2.3 QUALITY ASSURANCE/QUALITY CONTROL

All field work was completed following requirements of Sweet-Edwards/EMCON QA/QC procedures. All drilling and soil sampling equipment was decontaminated before use at each drilling/sampling location. Drilling equipment was cleaned using a high pressure/hot water washer. Water sampling equipment was cleaned using a non-phosphatic detergent wash followed by a solvent (MeOH) rinse and a deionized water rinse.

3.0 LABORATORY TESTING RESULTS

Testing results for soil samples are presented in Table 2. Mercury concentrations in water are presented in Table 3.

Mercury concentrations in the soils were above the detection limit (0.1 mg/kg) in 6 of the 34 samples collected. These samples were:

WELL	SAMPLE DEPTH	CONCENTRATION (mg/kg)
MW-2	10-11.5 ft.	0.46
MW-3	5-6.5 ft.	1.9
MW-4	5-6.5 ft.	0.2
MW-4	7.5-9 ft.	0.2
MW-4	10-11.5 ft.	0.1
MW-4	22.5-24 ft.	0.1

None of the soil samples had mercury concentrations which exceeded the 0.2 mg/L EP Toxicity limit (see Table 2).

Water samples from the monitoring wells have been collected on four separate dates: August 5, September 3 and November 4, 1987, and January 12, 1988. Samples have been submitted to Columbia Analytical Services for mercury analysis. As shown on Table 3, the 0.002 mg/L Primary Drinking Water Maximum Contaminant Level (MCL) has been exceeded in two of the monitoring wells. On August 5, 1987 and January 12 1988, the mercury concentrations in well MW-3 were 0.004 and 0.003 mg/L, respectively. Mercury concentrations in samples from well MW-4 have exceeded the MCL on each of the four sample dates. Concentrations have ranged from 0.012 to 0.039 mg/L, 6 to nearly 20 times the MCL.

Monitoring at the site is currently scheduled to continue until July 1988. Conclusions regarding ground water impacts from past practices will be addressed at the completion of the scheduled monitoring program; however, it is apparent from the data (see

TABLE 2
LABORATORY SOIL QUALITY DATA

WELL NO.	Sample Date	Sample Depth(ft)	MERCURY CONCENTRATIONS Total (mg/kg)	EPTOX (mg/L)
EP Toxicity Standard (mg/L)				0.2
MW-1	07/20/87	2.5-4	0.1 L	0.0002 L
		5-6.5	0.1 L	0.0002 L
		7.5-9	0.1 L	0.0002 L
		10-11.5	0.1 L	0.0002 L
		12.5-14	0.1 L	0.0043
		15-16.5	0.1 L	0.0002 L
		17.5-19	0.1 L	0.0002 L
		20-21.5	0.1 L	0.0002 L
MW-2	07/21/87	2.5-4	0.1 L	0.0002 L
		5-6.5	0.1 L	0.0002 L
		7.5-9	0.1 L	0.0002 L
		10-11.5	0.46	0.00021
		12.5-14	0.1 L	0.0002 L
		15-16.5	0.1 L	0.0002 L
		17.5-19	0.1 L	0.0002 L
		20-21.5	0.1 L	0.0002 L
MW-3	07/21/87	2.5-4	0.1 L	0.0002 L
		5-6.5	1.9	0.00024
		7.5-9	0.1 L	0.0002 L
		10-11.5	0.1 L	0.0002 L
		12.5-14	0.1 L	0.0002 L
		15-16.5	0.1 L	0.0002 L
		17.5-19	0.1 L	0.0002 L
		20-21.5	0.1 L	0.0002 L
MW-4	07/23/87	2.5-4	0.1 L	0.0002 L
		5-6.5	0.2	0.0002 L
		7.5-9	0.2	0.0002 L
		10-11.5	0.1	0.0002 L
		12.5-14	0.1 L	0.0002 L
		15-16.5	0.1 L	0.0002 L
		17.5-19	0.1 L	0.0005
		20-21.5	0.1 L	0.0005
		22.5-24	0.1	0.0002 L
		25-26.5	0.1 L	0.0002 L

KEY TO SYMBOLS:
MW = MONITORING WELL
L = LESS THAN

TABLE 3
LABORATORY WATER QUALITY DATA

Location	Sample Date	Hg mg/L	pH	COND. umhos/cm
MCL		0.002		
2nd Water Std.			6.5-8.5	1600
MW-1	08/05/87	0.0002 L	6.4	1170
	09/03/87	0.0005 L	7.1	1210
	11/04/87	0.0002 L	7.31	881
	11/04/87	0.0002 L	7.31	881
	11/04/87	0.0002 L	7.31	881
	11/04/87	0.0002 L	7.31	881
	01/12/88	0.0005	7.05	740
MW-2	08/05/87	0.0002 L	6.3	88000
	09/03/87	0.0005 L	6.7	20120
	11/04/87	0.0002 L	6.37	
	11/04/87	0.0002 L	6.37	
	11/04/87	0.0002 L	6.37	
	11/04/87	0.0002	6.37	
	01/12/88	0.002	6.4	63000
MW-3	08/05/87	0.004 E	6.3	490000
	09/03/87	0.0005 L	7.1	91000
	11/04/87	0.0002 L	5.56	13670
	11/04/87	0.0002 L	5.56	13670
	11/04/87	0.0002 L	5.56	13670
	11/04/87	0.0002 L	5.56	13670
	01/12/88	0.003 E	6.2	283800
MW-4	08/05/87	0.039 E	10.4 E	25000
	09/03/87	0.033 E	10.8 E	21360
	11/04/87	0.027 E	----	----
	11/04/87	0.031 E	----	----
	11/04/87	0.025 E	----	----
	11/04/87	0.03 E	----	----
	01/12/88	0.012 E	10.2	3638

KEY TO SYMBOLS:

MW = MONITORING WELL
MCL = MAXIMUM CONTAMINANT LEVEL
2nd. Water Std. = Secondary Drinking Water Standard
L = Less Than
E = Exceeds Maximum Contaminant Level

Table 3) that ground water in the site vicinity has bee affected.

APPENDIX A

MONITORING WELL LOGS

Sweet, Edwards & Associates, Inc.

BORING LOG

PROJECT WEYERHAEUSER-CHLORINE PLANT

Location SEE MAP **Boring No.** MW-1

Surface Elevation 24.48 Top of Casing **Drilling Method** Hollow Stem Auger

Total Depth 21.5 feet **Drilled By** Mountain States Drilling

Date Completed 7-20-87 **Logged By** C. Wells

WELL DETAILS	PENE-TRATION TIME/ RATE	DEPTH (FEET)	SAMPLE NO.	SAMPLE TYPE	PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
Bentonite Chips 2" Sch. 80 PVC CASING Sand 2" Sch. 80 PVC Screen w/0.010" Slots		0 5 10 15 20 25	1 2 3 4 5 6 7 8	SSP " " " " " " "		SP	0-20' SAND, gray, medium grained, poorly graded, loose, trace silt, occasional fine sand zones, saturated below ~10 feet. (FILL).	

Sweet, Edwards & Associates, Inc.

BORING LOG

PROJECT WEYERHAEUSER-CHLORINE PLANT

Location See map.

Boring No. MW-2

Surface Elevation 18.00 Top of Casing

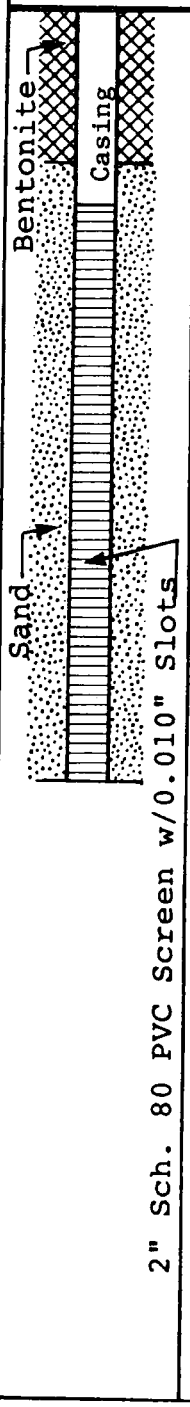
Drilling Method Hollow Stem Auger

Total Depth 21.5 FEET

Drilled By Mountain States Drilling

Date Completed 7-21-87

Logged By C. Wells

WELL DETAILS	PENETRATION TIME/ RATE	DEPTH (FEET)	SAMPLE NO.	SAMPLE TYPE	PERMEABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
		0				SP	0-9.5' SAND, gray-brown, poorly graded, loose, damp, (FILL).	
			1	SSP				
		5	2	"				
			3	"				
		10	4	"		SP-ML	9.5-14.5' INTERBEDDED SAND and SILT, dark gray, slightly to moderately cohesive, nonplastic, many organics, saturated.	
			5	"				
		15	6	"		SP	14.5-20.5' SAND, dark gray, fine to medium grained, poorly graded, saturated.	
			7	"				
		20	8	"				
		25						

Sweet, Edwards & Associates, Inc.

BORING LOG

PROJECT WEYERHAEUSER-CHLORINE PLANT

Location See Map

Boring No. MW-3

Surface Elevation 17.84 Top of Casing

Drilling Method Hollow Stem Auger

Total Depth 21.5 FEET

Drilled By Mountain States Drilling

Date Completed 7-21-87

Logged By C. Wells

WELL DETAILS	PENE-TRATION TIME/ RATE	DEPTH (FEET)	SAMPLE NO.	SAMPLE TYPE	PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
Bentonite, Casing, Sand, 2" Sch. 80 PVC Screen w/0.010" Slots		0				SP	0-4.5' SAND, brown, medium grained, poorly graded, loose, damp, (FILL).	
			1	SSP				
		5	2	"		SP-OL	4.5-7' FINE SANDY SILT, black, organic, slightly cohesive, moist (Clarifier Sludge).	
			3	"				
	▽	10	4	"		SW	7-17' SAND, gray-dark gray, medium grained, poorly to well graded, loose, some gravels and organic material 10-12 feet, saturated below ~10 feet.	
			5	"				
		15	6	"				
			7	"		SP	17-21.5' SAND, dark gray, fine grained, poorly graded, saturated.	
		20	8	"				
		25						

Sweet, Edwards & Associates, Inc.

BORING LOG

PROJECT WEYERHAEUSER-CHLORINE PLANT **Page** 1 **of** 1

Location See Map. **Boring No.** MW-4

Surface Elevation 26.73 Top of Casing **Drilling Method** Hollow Stem Auger

Total Depth 26.5 feet **Drilled By** Mountain States Drilling

Date Completed 7-23-87 **Logged By** C. Wells

WELL DETAILS	PENE-TRATION TIME/ RATE	DEPTH (FEET)	SAMPLE NO.	SAMPLE TYPE	PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
Bentonite, Casing, Sand, 2" Sch. 80 PVC Screen w/0.010" Slots		0				SP	0-9.5' SAND, brown-gray brown, medium grained, poorly graded, moist, (FILL).	
			1	SSP				
		5	2	"				
			3	"				
		10	4	"		SW	9.5-12' SAND, gray brown, medium to coarse grained, well graded, loose, damp.	
			5	"		SP	12-20.5' SAND, gray brown, gray, medium grained, poorly graded, saturated below 15 feet.	
		15	6	"				
			7	"				
		20	8	"		SP-ML	20.5-24' SANDY SILT, SILTY SAND, very dark gray, black, slightly to moderately cohesive, some organic material, saturated, (strong petroleum odor?).	
			9	"		ML		
		25	10	"			24-26.5' SILT, gray, moderately cohesive, trace sand.	
		30						

SEA-300-02a

APPENDIX B

FIELD DATA FORMS

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS: WEYHAUSER - CLOQUINE / INTERIOR
PROJECT NAME: _____ #: _____
CLIENT/CONTACT: _____

Well or Surface Site Number: MW-1
Sample Designation: _____
Date, Time: 11:56 AM 8-5-87
Weather: OVERCAST

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
26	16	Peristaltic	Sample	8-5 1220

Surface Water Flow Speed: _____ Measurement Method: _____ Date, Time: _____

SAMPLING: 2 of each bottle

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)
MW-1	8-5 1220	PARASTOLTIC	500	Poly	19'	yes		Yes ✓
"	" "	"	1000	Poly	19'	no		" ✓
"	" "	"	500	Glass	19'	no		" ✓
"	" "	"	200	Poly	19'	no		" ✓
"	" "	"	500					" ✓
"	" "	"						" ✓

Sampler Cleaning Method: Non-Phosphatic detergent wash, H2O rinse, MeOH rinse, Distilled H2O rinse

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				
16	-	988 um's						

NOTES:

Total # of Bottles: 10

Signature: _____

SEA-400-01

Sweet, Edwards & Associates, Inc.

Kelso, WA (2[illegible] 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS WEYERHAUSER CLORINE / INTERIOR
PROJECT NAME _____ #_____
CLIENT/CONTACT _____

Well or Surface Site Number _____
Sample Designation MW-2
Date, Time 8-5-87
Weather OVERCAST

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
36	225	PERISTALTIC	SAMPLE	8-5 13:30

Surface Water Flow Speed _____ Measurement Method _____ Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
MW-2	8-5 13:30 pm	PERISTALTIC	500	POLY	19'	YES		YES	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
"	" "	"	1000	POLY	19'	NO		"	
"	" "	"	500	GLASS	19'	NO		"	
"	" "	"	200	POLY	19'	NO		"	
"	" "	"	500		19'	NO		"	
"	" "	"	"			NO		"	

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				

NOTES:

CONDUCTIVITY METER IS NOT OPERATING

Total # of Bottles: 10 Signature: _____

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (2[illegible]423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS WEYERHAUSER CLORINE INTERIOR
PROJECT NAME _____ #_____
CLIENT/CONTACT _____

Well or Surface Site Number _____
Sample Designation MW-3
Date, Time 8-5-87 15:30
Weather OVERCAST

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
12	7.5	PERISTALTIC	SAMPLE	8-5-87-15:30

Surface Water Flow Speed _____, Measurement Method _____, Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
MW-3	8-5-87 15:30	PERISTALTIC	500	POLY	19	YES		YES	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
"	8-5-87 "	"	500	POLY	"	NO		"	
"	" "	"	500	GLASS	"	NO		"	
"	" "	"	200	POLY	"	NO		"	
"	" "	"	500	" "	"	NO		"	
"	" "	"	"	"	1	NO		"	

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				

NOTES:

CONDUCTIVITY METER NOT WORKING

ORANGE 40ml BOTTLES FIELD FILTERED

Total # of Bottles: 10

Signature: _____

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS WEYERHAUSER CLORINE / INTERLOX
PROJECT NAME _____ #_____
CLIENT/CONTACT _____

Well or Surface Site Number _____
Sample Designation MW-4
Date, Time 8-5-87
Weather _____

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
28.25	14.53	PERISTALTIC	SAMPLE	8-5-87 - 14'30

Surface Water Flow Speed _____, Measurement Method _____, Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
MW-4	8-5-87 - 1430	PERISTALTIC	500	POLY	19	YES		YES	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
"	" "	"	1000	POLY	"	No		"	
"	" "	"	500	GLASS	"	"		"	
"	" "	"	200	POLY	"	"		"	
"	" "	"	500		"	"		"	
"	" "	"	"		"	"		"	

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				

NOTES:

CONDUCTIVITY METER NOT WORKING

ORANGE DOT BOTTLES WERE FIELD FILTERED

Total # of Bottles: 10

Signature: _____

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS
PROJECT NAME Weyco INTERIOR # 54106.01
CLIENT/CONTACT Ken Johnson

Well or Surface Site Number MW.1
Sample Designation WI-9-3-C
Date, Time 9-3-87 1430
Weather Sunny

HYDROLOGY MEASUREMENTS: (Nearest .01 ft.) 10.83 ft below casing

Elevation	Date, Time	Method Used (M-Scope Number or Other)
	9-3-87 1430	electric sounder

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
4.0	3	peristaltic pump		9/3/87 1430-1445

Surface Water Flow Speed ____ Measurement Method ____ Date, Time ____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
	9/3/87	peristaltic	500	poly	15'	N	—	Y	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
		pump	1000	poly	5	N	NaOH		
			250	poly		N	—		

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh
2	7.92	2,200	15.2 °C	
3	7.34	1,300 ?	15.7	

NOTES:

pore vol. = 1.3 gal
water color = clear
Filter "metals" sample in lab

Total # of Bottles: 3 Signature: SE Henshaw

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS _____
PROJECT NAME Weyco Inturox # 54106.01
CLIENT/CONTACT Ken Johnson

Well or Surface Site Number MW-2
Sample Designation WI-9-3-B
Date, Time 9/3/87 1401
Weather Sunny

HYDROLOGY MEASUREMENTS: 10.75 below top of casing

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
		9/3/87 1401	electric sounder

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
4.5	3	peristaltic pump		9/3/87 1401 - 1420

Surface Water Flow Speed _____, Measurement Method _____, Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
	9/3/87 1420	peristaltic pump	500	poly	18	Y	HNO_3	Y	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
			1000	poly		N	NaOH		
			250	poly		N	—		

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				
2	8.25	—	15.1					
3	6.62		15.2					

NOTES:

pore vol. = 1.5 gal
Water color = clear
Water odor = slight
Cond. too high to read with meter
Filter "metals" sample in lab

Total # of Bottles: 3 Signature: [signature]

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS
PROJECT NAME Weyco INTEROX #S4106.01
CLIENT/CONTACT KEN JOHNSON

Well or Surface Site Number MW-3
Sample Designation WI-9-3-D
Date, Time 9-3-87
Weather SUNNY

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
9.62 feet below casing		9/3/87	electric sounder

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
7.5	5	peristaltic pump		9-3-87 1450-1520

Surface Water Flow Speed ____, Measurement Method ____, Date, Time ____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
	9-3-87	peristaltic	500	poly	18	N	—		Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
		pump	1000	poly		N	NaOH		
			250	poly		N	—		

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh
3	6.86	✓	22.3 °C	

NOTES:

pore vol. = 1.5 gal
water color - clear
cond too high to measure correctly
Filter "metals" sample in lab

Total # of Bottles: 3

Signature: S T Hencha

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS _____
PROJECT NAME Weyco INTERBAY # 5410 6.01
CLIENT/CONTACT Ken Johnson

Well or Surface Site Number MW-4
Sample Designation WI-9-2-A
Date, Time 1058 9/3/87
Weather SUNNY

HYDROLOGY MEASUREMENTS: 14.94' below top of casing

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
		9/3/87 1056	electric sounder

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
~~218~~ 18	23			9-3-87 1100 - 1222

Surface Water Flow Speed _____, Measurement Method _____, Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
	9-3-87	peristaltic	500	poly	18'	Y	HNO_3		Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
		pump	1000	poly		N	NaOH		
			250	poly		N	—		

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp °C	Eh
2	10.52	16300		
23 ~~24~~	11.35	15200	15.0	

NOTES:

Pore vol. = 1.3 gal
water color - dark brown
water odor - H_2S
Filter metals sample in lab.

Total # of Bottles: 3

Signature: _____

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS WEYERHAUSER / LONGVIEW T
PROJECT NAME WEYERHAUSER / CLOSURE # 541 01.02
CLIENT/CONTACT

Well or Surface Site Number NEAR PLANT MW-1
Sample Designation MW-1 11-2-87
Date, Time 11-4-87
Weather

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
10.73		11-4-87 0904	M-SCOPE

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
45	3	1" PUMP	—	11-4 - —

Surface Water Flow Speed _____, Measurement Method _____, Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
MW-1C			250					YES	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
A									
B									
D									

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh
	7.20	888	14.3	
	7.27	858	14.2	
	7.31	881		

NOTES:

1.5 GAL / PV

DEDICATED TUBING

Total # of Bottles: 4

Signature:

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS WEYERHAEUSER / LONGVIEW PLANT
PROJECT NAME WEYERHAEUSER/CHLORINE ANA # 541.01.02
CLIENT/CONTACT

Well or Surface Site Number MW-2
Sample Designation MW-3 / 11-4-87
Date, Time 11-4-87
Weather OVERCAST

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
10.86		A-4 1430	

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time

Surface Water Flow Speed _____, Measurement Method _____, Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
MW-3 A	1234				-15'		—		Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
B	1235						—		
C	1236						—		
D	1237						—		

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh
1	6.20	5520	13.8	
2	6.34	5500	14.3	
3	6.37	5485	14.2	

NOTES:

ACCURACY OF HYDROLOGY MEASUREMENTS SUSPECT
HIGH SALINITY CAUSES MSCOPE PROBLEMS
1 EAGLE FILTER
DEDICATED TUBING

Total # of Bottles: 4

Signature: [signature]

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

Well or Surface Site Number MW-3
Sample Designation M-4
Date, Time 11-4-87
Weather OVERCAST

LOCATION/ADDRESS [illegible]
PROJECT NAME WEYERHAEUSER / CHLORINE # 541.01.02
CLIENT/CONTACT

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
10.38		11-4 11:30	M SCOPE

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
≈ 6	3	P Pump		11-4-87

Surface Water Flow Speed ______, Measurement Method ______, Date, Time ______

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)
M-4 A	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]		
B	[illegible]							
C	12:53							
D	12:54							

Sampler Cleaning Method
Non-Phosphatic detergent wash
H2O rinse
MeOH rinse
Distilled H2O rinse

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				
1	5.42	13,800	19.7					
2	5.53	13,760	19.9					
3	5.56	13,670	19.8					

NOTES:

1.9 GALS / P.V

DEDICATED TUBING

Total # of Bottles: 4

Signature: [signature]

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS WEYERHAUSER / LONGVIEW
PROJECT NAME WEYERHAUSER CHLORINE # 541.01.02
CLIENT/CONTACT

Well or Surface Site Number MW-4
Sample Designation MW-2
Date, Time 11-4-87
Weather

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
15.33		11-4-87	M-SCOPE

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
4	= 4			11-4-87

Surface Water Flow Speed _____, Measurement Method _____, Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
MW-2A		P PUMP	250	POLY	61				Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
B					↓				
C									
D									

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				
3	11.50	→	13.9	→	OFF SCALE			

NOTES:

1 [illegible]

PH & CONDUCTIVITY OFF SCALE LAB WILL CONDUCT FIELD TESTS

DEDICATED TUBING

Total # of Bottles: 4 Signature

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS WEY
PROJECT NAME Weyerhaeuser / Cloring # 54/01.02
CLIENT/CONTACT

Well or Surface Site Number TRANSFER BLANK
Sample Designation R-5
Date, Time 11-4-87
Weather

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time

Surface Water Flow Speed ______, Measurement Method ______, Date, Time ______

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)
R-5 A	11-4 1335	P'Pump	250	POLY		YES	—	YES

Sampler Cleaning Method
Non-Phosphatic detergent wash
H2O rinse
MeOH rinse
Distilled H2O rinse

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				

NOTES:

TRANSFER BLANK USING DISTILLED WATER PURCHASED
AT PACK-N-SAVE / KELSO 11-1-87

Total # of Bottles: 1

Signature: [illegible]

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS WEYECO CLORINE
PROJECT NAME _____ #_____
CLIENT/CONTACT _____

Well or Surface Site Number MW-1
Sample Designation MW-1 / W-1 FW-2
Date, Time 1-12-88
Weather OVERCAST

HYDROLOGY MEASUREMENTS:

	(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
10-1.21	8.79		1030 1-12	M SCOPE

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
6	~5	PERISTALTIC MIDI VOLUME		1-12 ~5

Surface Water Flow Speed _____, Measurement Method _____, Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
MW-1	1-12 88 1100	P PUMP	500	POLY		YES	HCl	YES	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
W-2	" "								

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp.	Eh				
1	6.56	495	11°C					
	6.90	455	11°C					
	7.95	441						

NOTES:

1.5 GAL/PV

Total # of Bottles: _____ Signature: _____

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS WRYER CLORINE PLANT
PROJECT NAME _____ #_____
CLIENT/CONTACT _____

Well or Surface Site Number [redacted]
Sample Designation MW4 W1 / W-2
Date, Time 1-28-88
Weather OVERCAST

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
10-74 9.26		1-28-88 12:30	M SCOPE

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
		PUMP	SEA WATER	

Surface Water Flow Speed _____, Measurement Method _____, Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
MW-4/W-1	[illegible]	PUMP	[illegible]	P.V.C.		[illegible]		[illegible]	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
MW-4/W-2	1-28-88 [illegible]			"		YES	"		

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp. C	Eh				
1	6.57	OFF SCALE	12.7					
2	6.71	"	12.5					
3	6.[illegible]	"	12.4					

NOTES:

1.6 GAL PV

Total # of Bottles: _____ Signature: _____

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS WEYERHAUSER CLOQUATO
PROJECT NAME _____ #_____
CLIENT/CONTACT _____

Well or Surface Site Number MW 3
Sample Designation MW-5 / W-1 W-2
Date, Time 1-12-88
Weather OVERCAST

HYDROLOGY MEASUREMENTS:

	(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
57293	8.93		1-12-88 13:30	M SCOPE

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
6	23	P PUMP	SQUIRT	1-12-88

Surface Water Flow Speed _____ Measurement Method _____ Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
MW5/W1	14:00 1-12-88	P PUMP	40	POLY		YES		YES	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
W2	"	"	"	"		"		"	

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh
1	4.93	OFF SCALE	13.5	
2	5.20	"	13.5	
3	5.30	"	13.5	

NOTES:

1.8 GAL/PV /

HIGHLY SALINE

Total # of Bottles: _____ Signature: _____

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS WEYERHAEUSER CLOQUATO
PROJECT NAME _____ #_____
CLIENT/CONTACT _____

Well or Surface Site Number [redacted]
Sample Designation MW-2 / W-1 W-2
Date, Time 1-12-88
Weather OVERCAST

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
14.19		1-12-88 1130	M SCOPE

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
5	≈3	PUMP		

Surface Water Flow Speed _____, Measurement Method _____, Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
MW-2 / W-1	12:[illegible] 1-12-88		500	POLY		YES	1:3	*	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
W-2	1203					YES	YES		

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp. °C	Eh
1	7.34	1564 ?	12.0	
2	10.58	≈2250 ?	12.5	
3	10.60	2308 ?		

NOTES:

≈1.5 GAL / PV

DARK ODOROUS WATER, FOAMY

Total # of Bottles: _____ Signature: _____

Sweet, E[illegible]wards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS WEYERHAEUSER [illegible]
PROJECT NAME ______ # ______
CLIENT/CONTACT ______

Well or Surface Site Number TRANSFER BLAN[K]
Sample Designation MW-3
Date, Time 1-12-88
Weather OVERCAST

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time

Surface Water Flow Speed ______, Measurement Method ______, Date, Time ______

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		YES	[illegible]	YE[S]	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
[illegible]	[illegible]-88								

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				

NOTES:

TRANSFER BLANK

Total # of Bottles: ______ Signature: ______

SEA-400-01

APPENDIX C

CHAIN OF CUSTODY FORMS

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE 7-22-87 PAGE 1 OF 3

PROJECT Weyerhaenser Chlorine #
CLIENT INFO. CONTACT Ken Johnson
ADDRESS
TELEPHONE# 425-2150
SAMPLERS NAME Craig Wells PHONE# 423-3580
SAMPLERS SIGNATURE Craig E Wells

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE
1. MW-2-1 A	7-21			Soil
2. MW-2-2 A	7-21			"
3. MW-2-3 A	"			"
4. MW-2-4 A	"			"
5. MW-2-5 A	"			"
6. MW-2-6 A	"			"
7. MW-2-7 A	"			"
8. MW-2-8 A	"			"

ANALYSIS REQUESTED

BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	GENERAL CHEMISTRY (Specify) pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	OTHER (Specify)	NUMBER OF CONTAINERS
							X *	X *						
							X	X						
							X	X						
							X	X						
							X	X						
							X	X						
							X	X	/					
							X	X	X					

Relinquished By Sweet, Edwards & Assoc.
Craig E Wells
Signature Craig E Wells
Printed Name Sweet, Edwards
Firm
7-22-87 10:13
Date/Time

Relinquished By
Signature
Printed Name
Firm
Date/Time

Relinquished By
Signature
Printed Name
Firm
Date/Time

Received By Fran Adair
Signature Fran Adair
Printed Name CHS
Firm
7/22 10:15
Date/Time

Received By
Signature
Printed Name
Firm
Date/Time

Received By
Signature
Printed Name
Firm
Date/Time

PROJECT INFORMATION
Shipping I.D. No.
VIA
Project

SAMPLE RECEIPT
Total No. of Containers
Chain of Custody Seals
Received in good condition
LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS
* Mercury Only
Run Total mercury, hold For possible E.P. Tox mercury

DISTRIBUTION: WHITE - return to originator; YELLOW

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE 7-22-87 PAGE 2 OF 3

PROJECT Weyerhaeuser Chlorine#
CLIENT INFO. CONTACT Ken Johnson
ADDRESS
TELEPHONE# 425-2150
SAMPLERS NAME C. Wells PHONE# 423-3580
SAMPLERS SIGNATURE Craig E Wells

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS * (Circle One)	METALS (TOTAL) * (See Special Inst.)	TCLP ORGANICS	pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K						NUMBER OF CONTAINERS
1. MW-3-1 A	7-21			Soil								X	X										
2. MW-3-2 A	"			"								X	X										
3. MW-3-3 A	"			"								X	X										
4. MW-3-4 A	"			"								X	X										
5. MW-3-5 A	"			"								X	X										
6. MW-3-6 A	"			"								X	X										
7. MW-3-7 A	"			"								X	X										
8. MW-3-8 A	"			"								X	X										

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By	PROJECT INFORMATION	SAMPLE RECEIPT
Signature: Craig E Wells	Signature	Signature		
Printed Name: Sweet, Edwards	Printed Name	Printed Name	Shipping I.D. No.	Total No. of Containers
Firm: 7-22-87 10:13	Firm	Firm	VIA	Chain of Custody Seals
Date/Time	Date/Time	Date/Time	Project	Received in good condition
				LAB NO.
Received By FAN Adair	**Received By**	**Received By**	**SPECIAL INSTRUCTIONS/COMMENTS**	
Signature: Fan Adair	Signature	Signature	* Mercury only Run Total mercury, hold for EP Tox mercury	
Printed Name: CAS	Printed Name	Printed Name		
Firm: 7/22 10:15	Firm	Firm		
Date/Time	Date/Time	Date/Time		

DISTRIBUTION: WHITE - return to originator

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE 7-24-87 PAGE 1 OF 2

PROJECT Weyerhaeuser Chlorine#
CLIENT INFO.
CONTACT Ken Johnson
ADDRESS
TELEPHONE# 425-2150
SAMPLERS NAME C. Wells PHONE# 423-3580
SAMPLERS SIGNATURE Craig E Wells

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One) *	METALS (TOTAL) (See Special Inst.) *	TCLP ORGANICS	GENERAL CHEMISTRY (Specify) pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	OTHER (Specify)	NUMBER OF CONTAINERS
1. MW-4-1 A	7-23			Soil								X	X						
2. MW-4-2 A	"			"															
3. MW-4-3 A	"			"															
4. MW-4-4 A	"			"															
5. MW-4-5 A	"			"															
6. MW-4-6 A	"			"															
7. MW-4-7 A	"			"															
8. MW-4-8-A	"			"															

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By
Signature: Craig E Wells	Signature	Signature
Printed Name: Craig E Wells	Printed Name	Printed Name
Firm: Sweet, Edwards	Firm	Firm
Date/Time: 7-24-87 10:48	Date/Time	Date/Time
Received By Tracy Adair	**Received By**	**Received By**
Signature: Tracy Adair	Signature	Signature
Printed Name: CAS	Printed Name	Printed Name
Firm: 7-24-87 10:52	Firm	Firm
Date/Time	Date/Time	Date/Time

PROJECT INFORMATION
Shipping I.D. No.
VIA
Project

SAMPLE RECEIPT
Total No. of Containers
Chain of Custody Seals
Received in good condition
LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS
* Mercury Only
Run Total mercury, hold For EP Tox mercury

DISTRIBUTION: WHITE - Return to originator; YELLOW; PINK

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE July 24, 87 PAGE 2 OF 2

PROJECT Weyerhaeuser Chlorine
CLIENT INFO.
CONTACT Ken Johnson
ADDRESS
TELEPHONE# 425-2150
SAMPLERS NAME C. Wells PHONE# 423-3580
SAMPLERS SIGNATURE Craig E Wells

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE
1. MW-4-9 A	7-23			Soil
2. MW-4-10 A	"			
3.				
4.				
5.				
6.				
7.				
8.				

ANALYSIS REQUESTED

BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One) *	METALS (TOTAL) (See Special Inst.) *	TCLP ORGANICS	GENERAL CHEMISTRY (Specify) pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	OTHER (Specify)						NUMBER OF CONTAINERS
							X	X											
							X	X											

Relinquished By Sweet, Edwards & Assoc.
Signature Craig E. Wells
Printed Name Craig E Wells
Firm Sweet, Edwards
Date/Time 7-24-87 10:48

Relinquished By
Signature
Printed Name
Firm
Date/Time

Relinquished By
Signature
Printed Name
Firm
Date/Time

Received By Tracy Adair
Signature Tracy Adair
Printed Name CAS
Firm
Date/Time 7-24-87 10:48

Received By
Signature
Printed Name
Firm
Date/Time

Received By
Signature
Printed Name
Firm
Date/Time

PROJECT INFORMATION
Shipping I.D. No.
VIA
Project

SAMPLE RECEIPT
Total No. of Containers
Chain of Custody Seals
Received in good condition
LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS
* See note - Page 1

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE 8-5-87 PAGE 1 OF 1

PROJECT Weyerhaeuser-Chlorine Xerox # 54106.01
CLIENT INFO. CONTACT Ken Johnson
ADDRESS
TELEPHONE# 425-2150
SAMPLERS NAME J. Morales PHONE# 4233580
SAMPLERS SIGNATURE

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE
1. MW-1	8-5-87	12:20		H_2O
2. MW-2	8-5-87	13:30		H_2O
3. MW-3	8-5-87	14:30		H_2O
4. MW-4	8-5-87	15:30		H_2O
5.				
6.				
7.				
8.				

ANALYSIS REQUESTED

BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One) *	METALS (TOTAL) (See Special Inst.) **	TCLP ORGANICS	GENERAL CHEMISTRY (Specify) pH COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	OTHER (Specify) Sulfates	Sulfide	Cyanide				NUMBER OF CONTAINERS
						X	X	X		X			X	X	X				10
						X	X	X		X			X	X	X				
						X	X	X		X			X	X	X				
						Y		X		X			X	X	X				

Relinquished By Sweet, Edwards & Assoc.
Signature
JAMES MORALES
Printed Name
SEA
Firm
8-5-87 - 16:30
Date/Time

Relinquished By
Signature
Printed Name
Firm
Date/Time

Relinquished By
Signature
Printed Name
Firm
Date/Time

Received By
Tracy Adair
Signature
TRACY ADAIR
Printed Name
CAS
Firm
8-5-87 4:35
Date/Time

Received By
Signature
Printed Name
Firm
Date/Time

Received By
Signature
Printed Name
Firm
Date/Time

PROJECT INFORMATION
Shipping I.D. No.
VIA
Project

SAMPLE RECEIPT
Total No. of Containers
Chain of Custody Seals
Received in good condition
LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS
* EPTOX metals - Mercury
** Metals - Mercury, Fe, Cr, Pb, Ba, Mn

WHITE - return to originator

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE SEPT 3 PAGE 1 OF 1

PROJECT Weyco / INTEROX #54106.01
CLIENT INFO.
CONTACT Ken Johnson
ADDRESS
TELEPHONE#
SAMPLERS NAME S.R. Henshaw PHONE# 423-3580
SAMPLERS SIGNATURE S R Henshaw

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE
1. GW-1	9/3/87			WATER
2. GW-2	"			"
3. GW-3	"			"
4. GW-4	"			"
5.				
6.				
7.				
8.				

ANALYSIS REQUESTED

BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	GENERAL CHEMISTRY (Specify)						OTHER (Specify)			NUMBER OF CONTAINERS
										pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Na	Hg, Ba, Pb, Tot Cr	Cyanide	Fluoride				
										X		X	X	X	X				3
										X		X	X	X	X				3
										X		X	X	X	X				3
										X		X	X	X	X				3

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By	PROJECT INFORMATION	SAMPLE RECEIPT
Signature S R Henshaw	Signature	Signature		Total No. of Containers
Printed Name S.R. Henshaw	Printed Name	Printed Name	Shipping I.D. No.	Chain of Custody Seals
Firm Sweet, Edwards	Firm	Firm	VIA	Received in good condition
Date/Time 9/4/87 0744	Date/Time	Date/Time	Project	LAB NO.
Received By Mary Jepson	Received By Bonnie Chappel	Received By	SPECIAL INSTRUCTIONS/COMMENTS	
Signature	Signature BONNIE CHAPPEL	Signature	Filter "metal" samples	
Printed Name Mary Jepson	Printed Name Weyco	Printed Name		
Firm Weyerhaeuser Paper Co.	Firm 9/8/87 11:00	Firm		
Date/Time 9/4/87 8:50 A.M.	Date/Time	Date/Time		

DISTRIBUTION: WHITE - return to originator: YELLOW - lab: PINK - retained by originator

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE 1-12-88 PAGE 2 OF 2

PROJECT LUKE ENVIRONMENTAL CLEANUP # 541.01.02
CLIENT INFO.
CONTACT
ADDRESS
TELEPHONE#
SAMPLERS NAME PHONE#
SAMPLERS SIGNATURE

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE
1. MW-1 / W-1	1-12-88	SEE NOTE		H_2O
2. MW-1 / W-2	"	"		H_2O
3. MW-2 / W-1	"	"		H_2O
4. MW-2 / W-2	"	"		H_2O
5. MW-3 / W-1	"	"		H_2O
6. MW-3 / W-2	"	"		H_2O
7. MW-4 / W-1	"	"		H_2O
8. MW-4 / W-2	"	"		H_2O

ANALYSIS REQUESTED

BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	GENERAL CHEMISTRY (Specify) pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	OTHER (Specify) MERCURY	pH / CONDUCTIVITY				NUMBER OF CONTAINERS
													✓					
														✓				
													✓					
													✓	✓				
													✓					
														✓				
													✓					
														✓				

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By
Signature	Signature	Signature
Printed Name	Printed Name	Printed Name
Firm 15:07 1-12-88	Firm	Firm
Date/Time	Date/Time	Date/Time
Received By	**Received By**	**Received By**
Signature	Signature	Signature
Printed Name CAS	Printed Name	Printed Name
Firm 1/12 15:09	Firm	Firm
Date/Time	Date/Time	Date/Time

WHITE - return to ori

PROJECT INFORMATION
Shipping I.D. No.
VIA
Project

SAMPLE RECEIPT
Total No. of Containers
Chain of Custody Seals
Received in good condition
LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE 1-12-88 PAGE 2 OF 2

PROJECT Luckenbach # 541 01.02
CLIENT INFO.
CONTACT
ADDRESS
TELEPHONE#
SAMPLERS NAME PHONE#
SAMPLERS SIGNATURE

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE
1. mw-5/W-1	1-12-88	Battle SEE		H_2O
2. MW-5/W-2	"	"		H_2O
3.				
4.				
5.				
6.				
7.				
8.				

ANALYSIS REQUESTED

GENERAL CHEMISTRY (Specify)

OTHER (Specify)

BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	Preserve?	pH & conductivity				NUMBER OF CONTAINERS
													/	/				
													/	/				

Relinquished By Sweet, Edwards & Assoc.
Signature
JAMES MORALES
Printed Name
SEA
Firm
1 5:07 1-12-88
Date/Time

Relinquished By
Signature
Printed Name
Firm
Date/Time

Relinquished By
Signature
Printed Name
Firm
Date/Time

PROJECT INFORMATION
Shipping I.D. No.
VIA
Project

SAMPLE RECEIPT
Total No. of Containers
Chain of Custody Seals
Received in good condition
LAB NO.

Received By
Signature
EVAN ADAIR
Printed Name
IAS
Firm
1/12 15:09
Date/Time

Received By
Signature
Printed Name
Firm
Date/Time

Received By
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS

Chain of Custody / Laboratory Analysis Request

DATE 7-20-87 PAGE 1 OF 1

[redacted]

SAMPLERS NAME [redacted] PHONE# 423-3580

SAMPLERS SIGNATURE Craig E Wells

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE
1. MW-1-1	7-20			Soil
2. MW-1-2	"			"
3. MW-1-3	"			"
4. MW-1-4	"			"
5. MW-1-5	"			"
6. MW-1-6	"			"
7. MW-1-7	"			"
8. MW-1-8	"			"

ANALYSIS REQUESTED

BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	GENERAL CHEMISTRY (Specify) TCLP ORGANICS	pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K		OTHER (Specify)					NUMBER OF CONTAINERS
							X	X*											
							X	X											
							X	X											
							X	X											
							X	X											
							X	X											
							X	X											
							X	X											

* See Note

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By
Signature Craig E Wells	Signature	Signature
Printed Name Craig E. Wells	Printed Name	Printed Name
Firm Sweet, Edwards & Assoc.	Firm	Firm
Date/Time 7-20-87 6:08 P.	Date/Time	Date/Time
Received By Mike Clark	Received By	Received By
Signature	Signature	Signature
Printed Name	Printed Name	Printed Name
Firm	Firm	Firm
Date/Time	Date/Time	Date/Time

PROJECT INFORMATION

Shipping I.D. No.

VIA

Project

SAMPLE RECEIPT

Total No. of Containers

Chain of Custody Seals

Received in good condition

LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS

* Mercury Only
Run total first
Hold For E.P. TOX.

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE 11 - - 87 PAGE ____ OF ____

PROJECT [illegible] # 541 [illegible]-2
CLIENT INFO.
CONTACT ____
ADDRESS ____
TELEPHONE# ____
SAMPLERS NAME JAMES MORALES PHONE# 423-35[illegible]
SAMPLERS SIGNATURE [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE
1. M-1 MW-1	11-4-87	Seat [illegible]		H_2O
2. M-2 MW-4	11-4-87			H_2O
3. M-3 MW-2	11-4-87			H_2O
4. M-4 MW-3	11-4-87			H
5. M-5 —	11-4-87			
6.				
7.				
8.				

ANALYSIS REQUESTED — GENERAL CHEMISTRY (Specify) — OTHER (Specify)

Sample	BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	pH, COND. ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	Hg						NUMBER OF CONTAINERS
1.																				
2.			x																	4
3.			x																	4
4.			x																	1
5.			x																	
6.																				
7.																				
8.																				

Relinquished By Sweet, Edwards & Assoc.
[signature]
Signature
JAMES MORALES
Printed Name
SEA
Firm
11 4 87 13:45
Date/Time

Received By
[signature]
Signature
FRED ADLNIK
Printed Name
CAS
Firm
11/4/87 13:47
Date/Time

Relinquished By
Signature
Printed Name
Firm
Date/Time

Received By
Signature
Printed Name
Firm
Date/Time

Relinquished By
Signature
Printed Name
Firm
Date/Time

Received By
Signature
Printed Name
Firm
Date/Time

PROJECT INFORMATION
Shipping I.D. No.
VIA
Project

SAMPLE RECEIPT
Total No. of Containers
Chain of Custody Seals
Received in good condition
LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS
F[illegible] 5
EACH LOCATION [illegible] BOTTLES [illegible]
A, B, C, D 4 [illegible] EACH LO[illegible]T

State of Washington
Department of Ecology

REQUEST FOR ANALYSIS

MANCHESTER ENVIRONMENTAL LABORATORY

PROGRAM CODE 868 DATE 6/17/87

SOURCE Weyerhaeuser, Longview REQUESTED BY M.J. Spencer

LOCATION Chlor-Alkali Plant

REPORT DATA TO Michael Spencer 438-3016

DATES: SAMPLING: 6/16 TO LAB: 6/17

☐ EMERGENCY ☑ CUSTODY ☐ CLASS II

MATRIX: ☐ WATER ☑ SOIL ☐ SLUDGE ☐ OTHER

OTHER

LAB USE ONLY

LAB APPROVAL BY

PROJECT CODE

LAB NUMBERS

PHYSICAL & INORGANIC	# Samples	C,N,P,BIOL & METALS	# Samples	ORGANICS, TOXICS	# Samples
Turbidity		BOD/5 Day		Base/Neutrals/Acids	
pH		COD Chem Oxygen Demand		Base/Neutrals Only	
Conductivity		TOC Total Org Carbon		Acids Only	
Total Alkalinity				Volatile Organics	
Acidity		NUTS (4)		Pesticide/PCB's	
Hardness, Total		Ammonia		PCB's Only	
Chloride		Nitrate-Nitrite		Purgeable Halocarbons	
Fluoride, Total		Total Phosphate		Herbicides	
Sulfate		Ortho-Phosphate			
Cyanide, Total					
Color				Poly. Aromatic Hydrocarbons	
Salinity		Fecal Coliform Bacteria		Hydrocarbon Analysis	
		Fish Bioassay		Phenolics (AAP)	
				Oil & Grease	
SOLIDS (4)		Priority Pollutant Metals		Ignitability	
TSS Tot Susp Solids		EP TOX Metals		Halogenated Hydrocarbons	
TS Total Solids		METALS (list) Total Diss.		TOX	
TVSS Volatile Solids		Total Mercury	10	% Solids	
SS Settleable Solids				% Lipids	

COMMENTS: There are 5 sample splits collected with Weyerhaeuser personnel

SAMPLE BOTTLES REQUIRED: —

SAMPLE DISPOSITION AFTER ANALYSIS

ECY 040-2-62 Rev. 10/86

FIELD SAMPLE DATA AND CHAIN OF CUSTODY SHEET

State of Washington Department of Ecology

Project Code: [redacted] Account:

Name/Location: Weyerhaeuser - Longview

Project Officer: M J Spencer

☒ Enforcement/Custody
☐ Possible Toxic/Hazardous
☐ Data Confidential
☐ Data for Storet

Notes: Sample splits collected by Weyerhaeuser in my presence.

Samplers: J. M. [redacted]

Recorder: M [redacted]

SOURCE CODE	MATRIX: Water	Sediment	Tissue	Oil	CONTAINERS & PRESERV: Unpres	H_2SO_4	HNO_3	Ice	LAB NUMBER: Yr	Wk	Seq	STATION NUMBER	DATE: Mo	Dy	Time	COMPOSITE ONLY: ENDING DATE Mo	Dy	Time	Type	Freq	STATION DESCRIPTION
												[redacted]									Weyerhaeuser Chlor
												[redacted]									
												[redacted]									
												[redacted]									
												[redacted]									
												[redacted]									
												[redacted]									
												[redacted]									
												[redacted]									
												[redacted]	V	Y	4						

LAB NUMBER: Yr	Wk	Seq	DEPTH	Units	Type	COL MTD CD	QA CODE	TEMP DEG C	pH	CNDCTVTY umho/cm	MISCELLANEOUS

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: M J Spencer	RECEIVED BY: Brian K. Glenn
RELINQUISHED BY: Brian K. Glenn	RECEIVED BY:
RELINQUISHED BY:	RECEIVED BY:
RELINQUISHED BY:	REC'V'D BY MOBILE LAB FOR FIELD ANAL.:
DISPATCHED BY: DATE/TIME	RECEIVED FOR LAB BY:
METHOD OF SHIPMENT	

ECY 040-115

Laboratory Copy White — Project Officer Copy Yellow — Field or Office Copy Pink

*** Lab Analysis Report ***

Transaction #: 08251401 Seq #: 01 (30) Metals - Specified
(WE) DOE, Manchester Was
: WEYERHAUSER, LONGVIEW (DOE-357L) 868 MJS
: Mercury Hg-Sedmt mg/kg-wt (Par# 71920 S)

Instrument: ACF403 AA Cold Flame (PE403)
Method: EP1-245.5 Mercury, Cold Vapor, Manual, Sediments
Chemist: (MMM) McIntosh, Myrna LAB Hours Worked:
Lab Prep:( ) Unspecifed Date Preprd: Date Anlyzd: 870812

Matrix: (40) Sediment Units: (24) mg/kg-wt

ine	Sample #	Result	Sample Location/Description	#Days to Anl
1	87 257871	1.3	1	870616 (57)
2	87 257872	.21	2	870616 (57)
3	87 257873	5.4	3	870616 (57)
4	87 257874	.55	4	870616 (57)
5	87 257875	.15	5	870616 (57)
6	87 257876	4.9	6	870616 (57)
7	87 257877	7.8	7	870616 (57)
8	87 257878	4.1	8	870616 (57)
9	87 257879	17.	9	870616 (57)
10	87 257880	.078	10	870616 (57)

ord Type: TRNIN2 Date Verified: 8/26/87 By:
saction Status: New Transaction...First Printing...Unverified.
ocessed: 25-AUG-87 14:40:13 Status: N Batch: (In CUR DB)

APPENDIX B
CORRESPONDENCE

Weyerhaeuser Paper Company

Longview, Washington 98632
(206) 425-2150

June 29, 1987

Michael Spencer
Hazardous Waste Clean-up Program
Washington Department of Ecology
MS PV-11
Olympia, WA 98504-8711

Dear Michael:

Re. Chlor-Alkali Plant Mercury Investigation

Enclosed is a copy of the strategy our consulting engineers, Sweet, Edwards and Associates, would intend to follow in siting the four shallow groundwater monitoring wells in the area west of the Chlor-Alkali plant. Following your review, please let me know of any concerns you might have with this approach. We are intending to have these wells installed in mid-July.

Sincerely,

Ken Johnson
Region Environmental Engr.

KJ:ph

KJpM1-6/29

Sweet, Edwards & Associates, Inc.
Ground Water, Waste Management, Engineering Geology & Drilling Services

506 Royal Street West • Kelso, WA 98626-3409 • (206) 423-3580

June 23, 1987

Ken Johnson
Regional Environmental Engineer
Weyerhaeuser Paper Company
Longview, WA 98632

RE: MONITORING WELLS AT THE WEYERHAEUSER CHLORINE PLANT

Dear Ken:

We propose to install four shallow monitoring wells near the west side of the Longview chlorine plant. Previous investigations by Weyerhaeuser have shown that there are low part per million concentrations of mercury in the shallow soils near the salt storage pile west of the plant. The purpose of these monitoring wells is to determine if there is mercury contamination in shallow ground water near the western area of the plant site.

The four monitoring wells will be installed in two steps. The first step will be to determine ground water flow direction in the vicinity of the salt storage pile. This will be done by installing three shallow monitoring wells at the locations shown on the attached figure. Hydrology measuring points will also be established on the Columbia River and CDID ditch #3.

Following installation of the initial three monitoring wells, the measuring point elevations of these three wells will be surveyed. Hydrology measurements from the initial three wells, the river, and ditch #3 will be used to determine ground water flow direction and to thereby locate an additional downgradient monitoring well. Ground water studies at other Longview area idustrial sites have shown that the CDID ditches generally control shallow ground water flow direction. For this reason, ground water flow direction in the vicinity of the chlorine plant may be towards or away from the Columbia River.

The four monitoring wells will be installed using Sweet-Edwards' QA/QC drilling methods and field procedures. The wells will be drilled with a hollow stem auger drilling machine. During drilling, soil samples will be taken at minimum 3-foot intervals, with the samples split in the field. One set of soil samples will be submitted for determination of total mercury content, and the second set of samples held for later laboratory testing if needed.

All downhole drilling and sampling equipment will be steam cleaned between boreholes and soil samples to prevent cross contamination. Soil samples will be preserved and stored prior to laboratory testing according to the requirements of EPA SW-846.

The monitoring wells will be constructed of rigid PVC casing and screen with threaded joints and machined-screen slots. The wells will be completed with a locking steel security casing set in a concrete base. The wells will be drilled and constructed according to the requirements of WAC 173-160.

Following installation of the fourth monitoring well, the screens will be developed using pumping and surging techniques. The wells will then be sampled every other month for one year and the ground water samples tested for total mercury. Sweet-Edwards' QA/QC field procedures for ground water sampling and chain of custody will be followed. Sweet-Edwards' field procedures for monitoring well installation and ground water sampling have been audited by the Washington DOE and Region X EPA.

If you have any questions regarding this proposal, please call.

Respectfully submitted,

SWEET, EDWARDS & ASSOCIATES, INC.

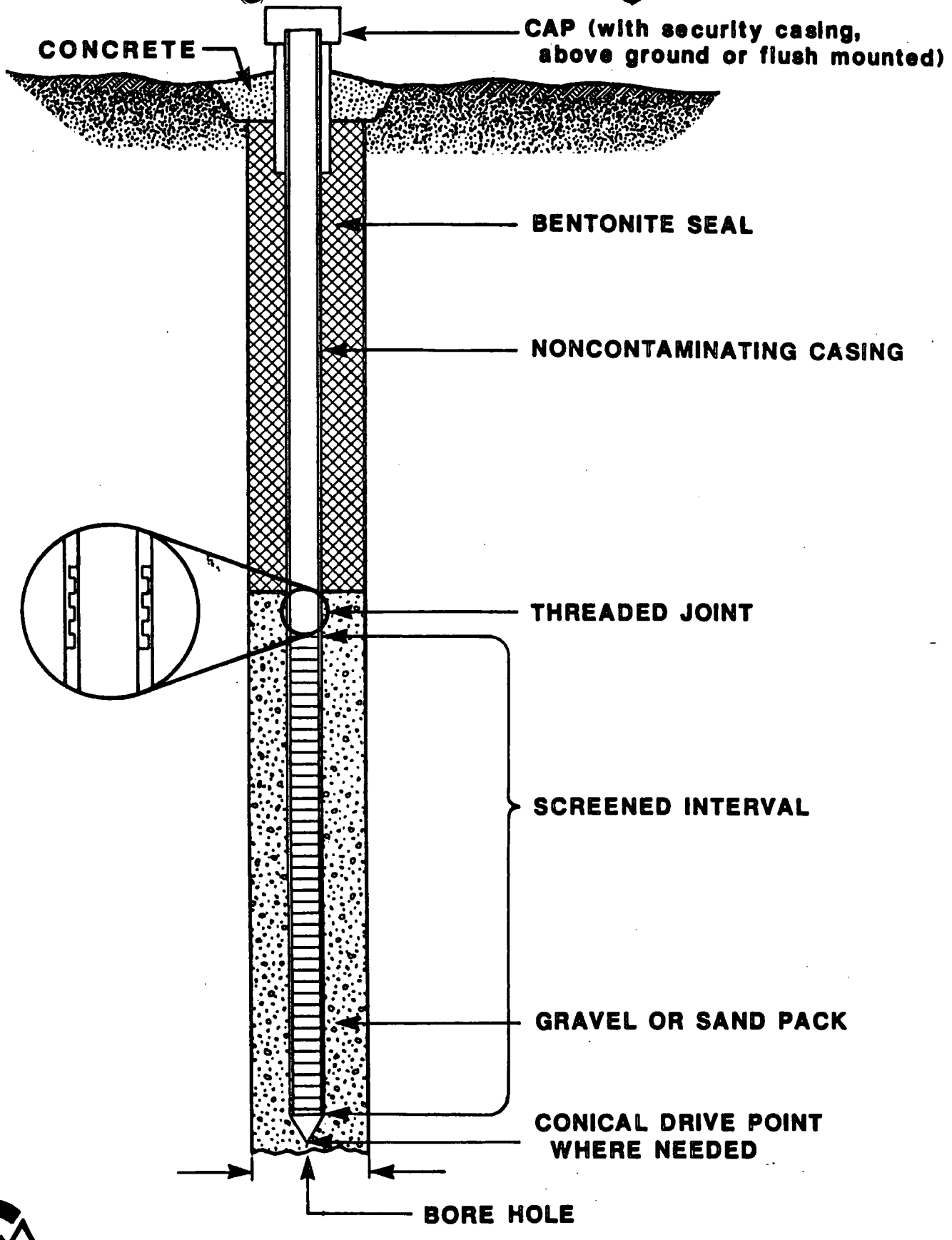
John E. Edwards

JOHN E. EDWARDS
Vice President

bg

ENC: Figure
Monitoring Well
Security Casing Diagram
Field Data Sheet
Chain of Custody

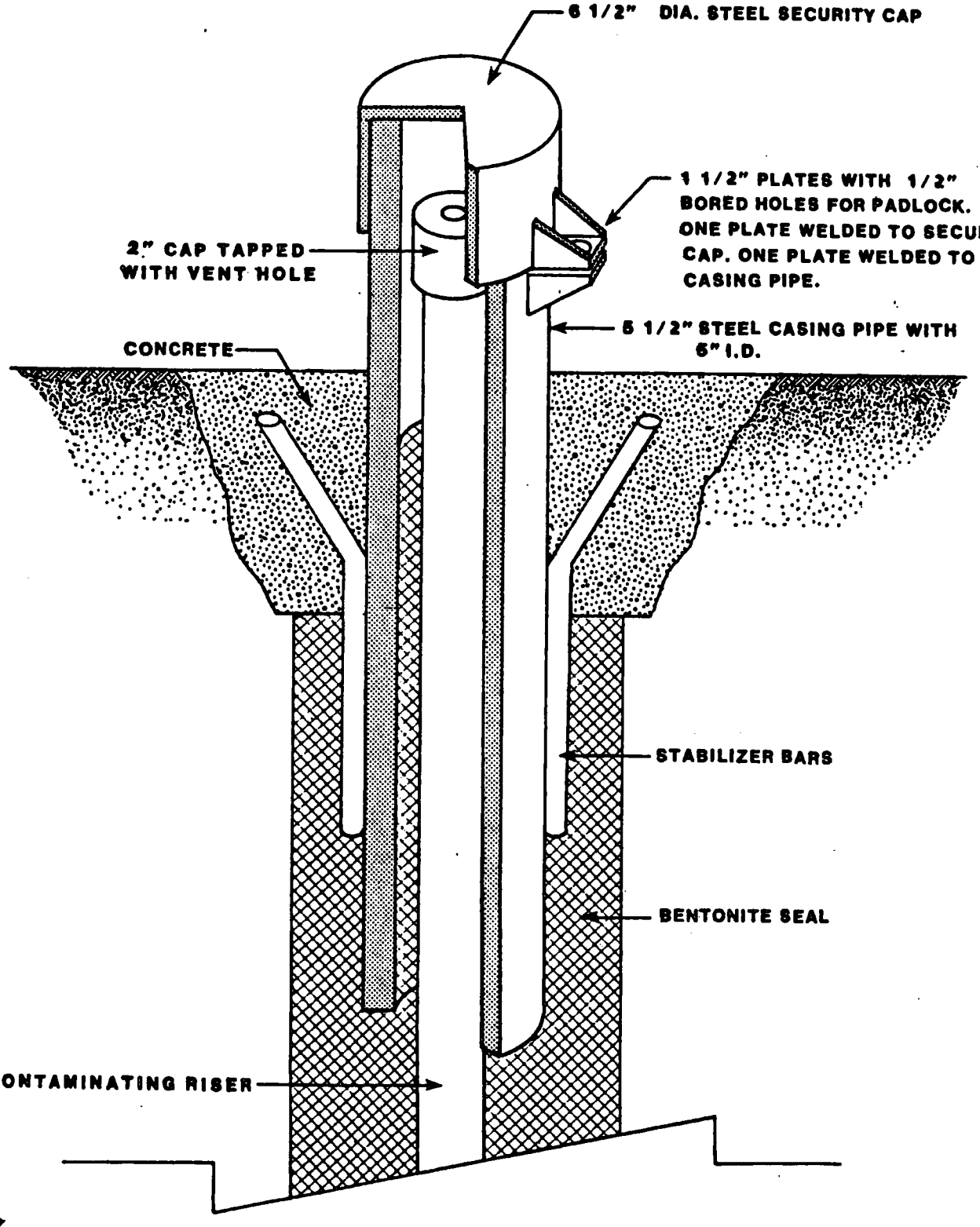
SINGLE COMPLETION MONITORING WELL



Sweet, Edwards & Associates, Inc. • P.O. Box 328 • Kelso, WA 98626

Revised Date:
2/23/87

MONITORING WELL SECURITY CASING



Sweet, Edwards & Associates, Inc. • P.O. Box 328 • Kelso, WA 98626

Revised Date
6/17/85

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Field Sampling Data

LOCATION/ADDRESS _____ Well or Surface Site Number _____
PROJECT NAME _____ # _____ Sample Designation _____
CLIENT/CONTACT _____ Date, Time _____
Weather _____

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)

WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time

Surface Water Flow Speed _____, Measurement Method _____, Date, Time _____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preserva-tive	Iced (yes,no)	Sampler Cleaning Method
									Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				

NOTES:

Total # of Bottles: _____ Signature: _____

SEA-400-01

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE _____ PAGE _____ OF _____.

PROJECT _____ #_____
CLIENT INFO.
CONTACT _____
ADDRESS _____
TELEPHONE# _____
SAMPLERS NAME _____ PHONE#_____
SAMPLERS SIGNATURE _____

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	ANALYSIS REQUESTED: BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	GENERAL CHEMISTRY (Specify): pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	OTHER (Specify)						NUMBER OF CONTAINERS
1.																								
2.																								
3.																								
4.																								
5.																								
6.																								
7.																								
8.																								

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By	PROJECT INFORMATION	SAMPLE RECEIPT
Signature	Signature	Signature		Total No. of Containers
Printed Name	Printed Name	Printed Name	Shipping I.D. No.	Chain of Custody Seals
Firm	Firm	Firm	VIA	Received in good condition
Date/Time	Date/Time	Date/Time	Project	LAB NO.
Received By	**Received By**	**Received By**	**SPECIAL INSTRUCTIONS/COMMENTS**	
Signature	Signature	Signature		
Printed Name	Printed Name	Printed Name		
Firm	Firm	Firm		
Date/Time	Date/Time	Date/Time		

DISTRIBUTION: WHITE - return to originator; YELLOW - lab: PINK - retained by originator.

SEA-400-05

ANDREA BEATTY RINIKER
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Mail Stop PV-11 • Olympia, Washington 98504-8711 • (206) 459-6000

May 27, 1987

Mr. Ken Johnson
Region Environmental Engineer
Weyerhaeuser Paper Company
Longview, WA 98632

Dear Mr. Johnson:

Thank you for the opportunity to review Weyerhaeuser Company's work plan for obtaining supplemental mercury residuals information at the site of the former Longview Chloralkali Plant. My comments and further recommendations are:

1. As discussed on the telephone with you last week, I also believe it is preferable to locate one of the downslope monitoring wells further to the west of the boat launch road. However, following discussions with Mike Gallagher, Ecology Hydrogeologist, it is recommended that this be an additional well, with the two downslope wells shown in your figure remaining as shown. This would give a much more comprehensive monitoring of any possible ground water contamination, or absence thereof, and should not significantly increase total costs.

2. During construction of these three downslope wells, it would be advisable to collect soil samples at two to three foot intervals and archive for possible future analysis if the ground water study indicates above background levels of mercury. This would provide easily obtainable information regarding depth profiles of any contamination. These should be stored at 4°C at least, or preferably frozen.

3. I believe six bimonthly sample collections carried out over a period of twelve months would characterize seasonal ground water fluctuations more comprehensively than at monthly intervals for six months as you propose. This should not alter the study total costs.

4. With regards to the upslope well, what assurances do you have that the area selected is free from any previous contamination events?

5. I believe it would be appropriate for me to observe the collection of soil samples from the east site area, and be provided opportunity to obtain sample splits for possible analysis by our Ecology laboratory.

6. I feel it would be in both our interests for Ecology to receive interim data on the ground water assessment routinely as soon as available, rather than on request.

I believe I have covered all the points of concern raised through my review of your work plan. Weyerhaeuser is to be complimented for their initiative in presenting this proposal in such a timely manner. Once your implementation schedule is revised to reflect the inexplicable delay in my obtaining a copy of this for review, I shall endeavor punctuality on my part to ensure that this study shall proceed in a timely manner.

Please call me at (206) 438-3016 if you have any questions concerning these comments and recommendations.

Sincerely,

Michael J. Spencer

Michael J. Spencer
Hazardous Waste Cleanup Program

MJS:ra

cc: Emily Ray, Ecology
Bob Kievit, EPA WOO

Weyerhaeuser Paper Company

Longview, Washington 98632
(206) 425-2150

April 14, 1987

Michael Spencer
Hazardous Waste Programs
Washington Department of Ecology
MS PV-11
Olympia, WA 98504

Dear Mr. Spencer:

Attached is a work plan which intends to address the additional information needs identified in your February 16 site inspection report on Weyerhaeuser Company's Longview Chlor--Alkali plant. With your approval, we are prepared to implement this plan immediately.

If your review of the plan results in any questions, please feel free to contact myself or Jim Fisher (ph. 924-6825).

Sincerely,

Ken Johnson
Region Environmental Engr.

KJ:ph

A Proposed Study Plan
Supplemental Mercury Residuals Information
Longview Weyerhaeuser Chloralkali Plant

Introduction

On February 16, 1987, the Weyerhaeuser Company received from the Washington Department of Ecology (WDOE) a copy of their Site Inspecti Report, which describes the WDOE and Region X EPA decision and recommendations concerning the residual mercury contamination issue a the Weyerhaeuser Company's Longview Chloralkali plant. The results o the report stated that there was no apparent impact on the various environments surrounding the plantsite, and that planned industrial development in the area west of the facility would be allowed to go forward. However, there were some requests for additional informatio and site characterization before the WDOE would recommend the site fo removal from the CERCLIS list of active hazardous waste sites, and place it on the EPA list of sites requiring no further action.

The additional study requirements included: groundwater monitori in the vicinity of the designated "west site"; notification of the potential safety implications of the residual mercury contamination i the surficial soils at the west site to any construction crews; notin the presence of the residual mercury at the west site in the property deed; and performing more detailed characterization of the mercury residual potential at the designated "east site".

The following describes a proposed plan for providing the supplemental information required by the WDOE.

Approach/Experimental Design

Draft Attached

1. Groundwater Monitoring at the West Site

A. Well Installation

Install three (3) groundwater wells in the vicinity of the designated "west site" area of the chloralkali plant to sample the surficial aquifer that occurs at approximately 10-15 feet in depth. Specifically:

a. Two wells will be driven approximately midway between the pa area at the west site and the Columbia River, along the corridor between the pulp mill effluent pipes and the boat launch.

b. One well for assessing background conditions will be driven upslope approximately 400-500 feet north of the west area, a in a direction perpendicular to, and directly away from the river.

All wells will be screened at approximatley 12 to 15 feet depths and will be of appropriate materials and specifications to adequately sample the uppermost aquifer for residual mercury in the groundwater.

Survey wells.

B. Groundwater Assessment Protocol

Samples for total mercury will be collected from each of the thr groundwater assessment wells at monthly intervals for six months following their installation. A finding of no significant difference ($P<0.1$) in sample mercury concentrations between upslope and downslop wells will require no further sampling from the wells, and serve to substantiate that the "west site" is not having an impact on groundwa quality in the area. However, a finding of significant difference ($P<0.1$) between upslope and downslope well sample mercury values will require monthly sampling for an additional six months to further characterize ambient conditions and well sample differentials.

2. Construction Safety at the West Site

Any future construction plans which may involve the west site ar will include additional safety procedures specific for the potential exposure to residual mercury in the surficial soils in certain areas.

3. Property Deed Notation

A notation on the deed to the property will be recorded that wil in perpetuity notify any potential purchaser that the surficial soils in certain areas of the west site contain elevated residual mercury concentrations.

4. East Site Expanded Assessment

In an effort to further characterize the extent of any residual mercury contamination at the east site area, the following sampling p will be followed:

A. Per the attached drawing of the east site (and associated aer phota circa 1970), depth-integrated soil samples will be collected at Sevenlocations, which coincide with the sites of the former brine ponc The brine ponds, of course, were cleaned up per WDOE in the mid-1970 and filled in with clean sand. The site is now a lumber products storage yard.

B. Samples will be collected via a backhoe from each visually different strata, or at least three depths (1, 5, and 10 feet) if the soil profile is uniform in character.

C. Samples will also be collected of bottom sediments at two locations along the so-called "caustic storage" ditch, located at the corner of the old chlorine plant cell room building.

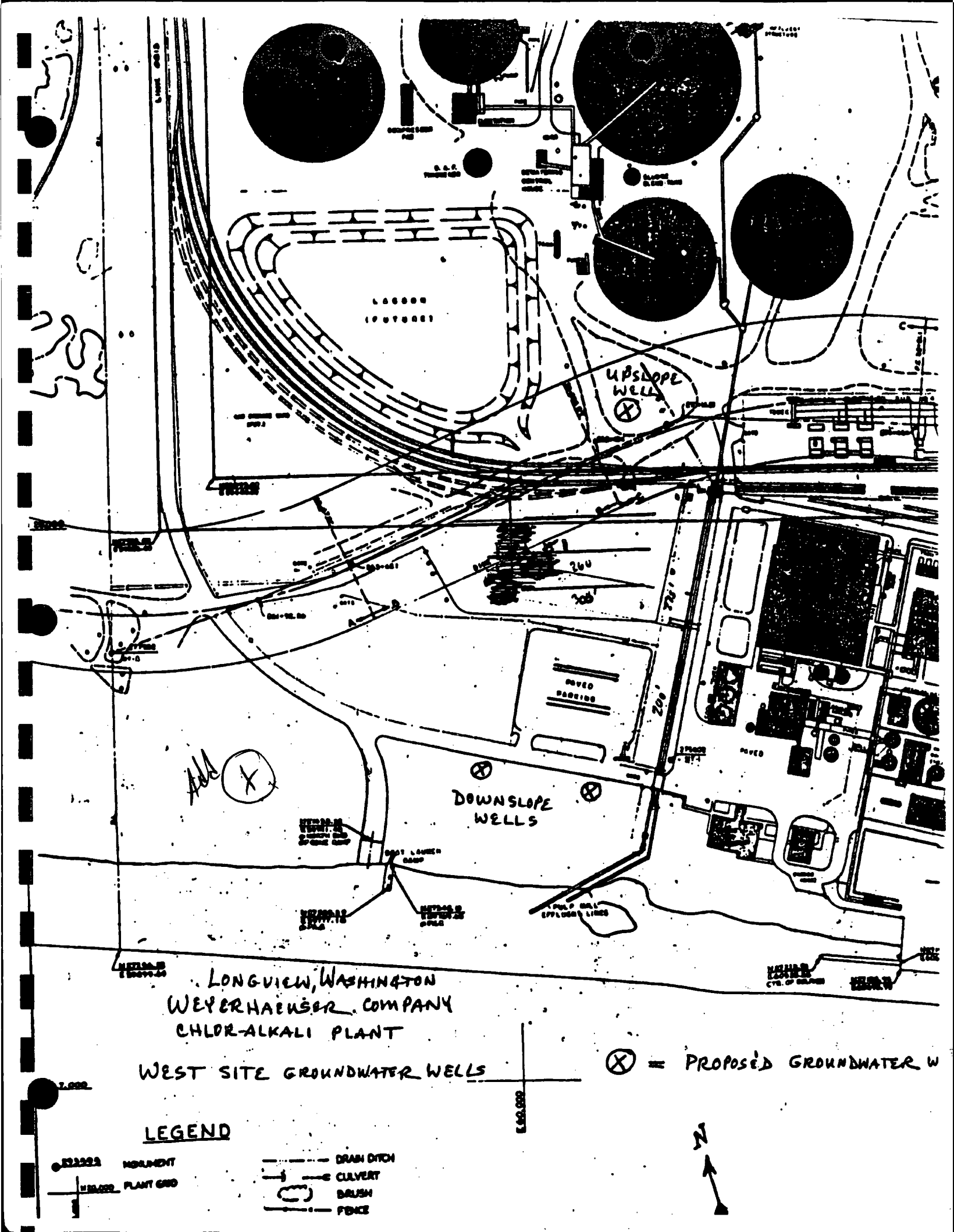
D. All samples will be analyzed for total mercury residuals at t Weyerhaeuser Technology Center Analytical Laboratory in Federal Way, Washington. The WTC is a certified EPA contract laboratory.

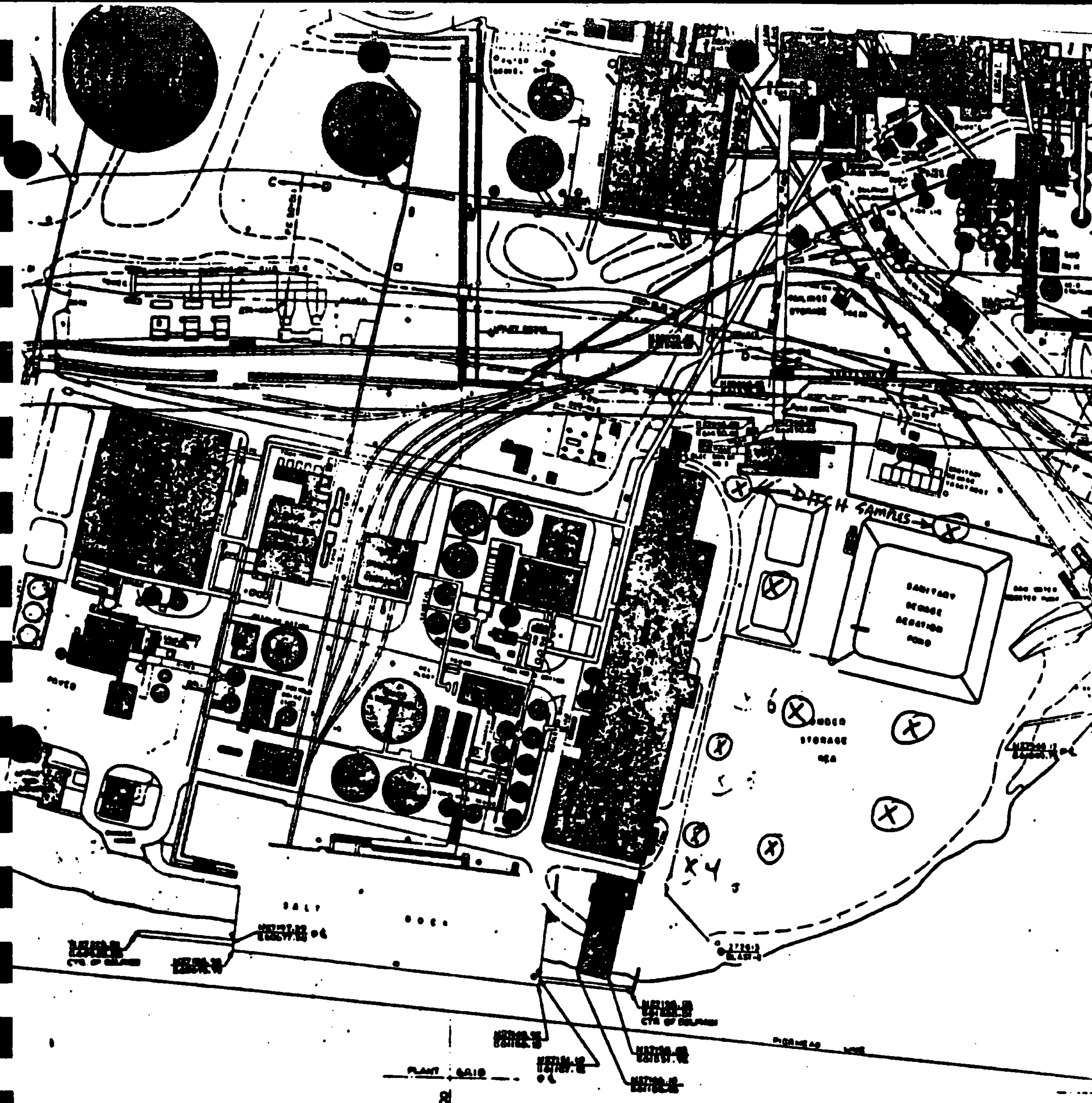
Results and Reporting

The results of the above studies will be forwarded to the WDOE i two separate reports. The first report will include all items except the groundwater assessment, and will be issued as soon as possible af the east site characterization is completed. This should occur approximately two months after the plan is implemented. The second report will deal specifically with the groundwater study results, and will be completed approximately one month after the final groundwater samples are collected for analyses. Interim data on the groundwater assessment will be available to the WDOE on request.

Study Implementation Schedule and Cost Estimation Plan

ITEM	START DATE	END DATE	COST ($)
Groundwater well installation	Mid-April	May 1, 1987	5,000
Groundwater sampling & anal.	Early May	Early October	2,500
East site sample collection	(Early May,	Two-days)	1,500
East site sample analyses	Early May	Early June	2,500
Safety Notification	Mid-April	---	---
Property Deed recording	Mid-April	---	---
Reports	1) Late June	(2 Late October	1,000
		Study Total Cost	$12,500


UPSLOPE WELL
DOWNSLOPE WELLS
LONGVIEW, WASHINGTON
WEYERHAEUSER COMPANY
CHLOR-ALKALI PLANT
WEST SITE GROUNDWATER WELLS
⊗ = PROPOSED GROUNDWATER W
LEGEND
MONUMENT
PLANT GRID
DRAIN DITCH
CULVERT
BRUSH
FENCE
N



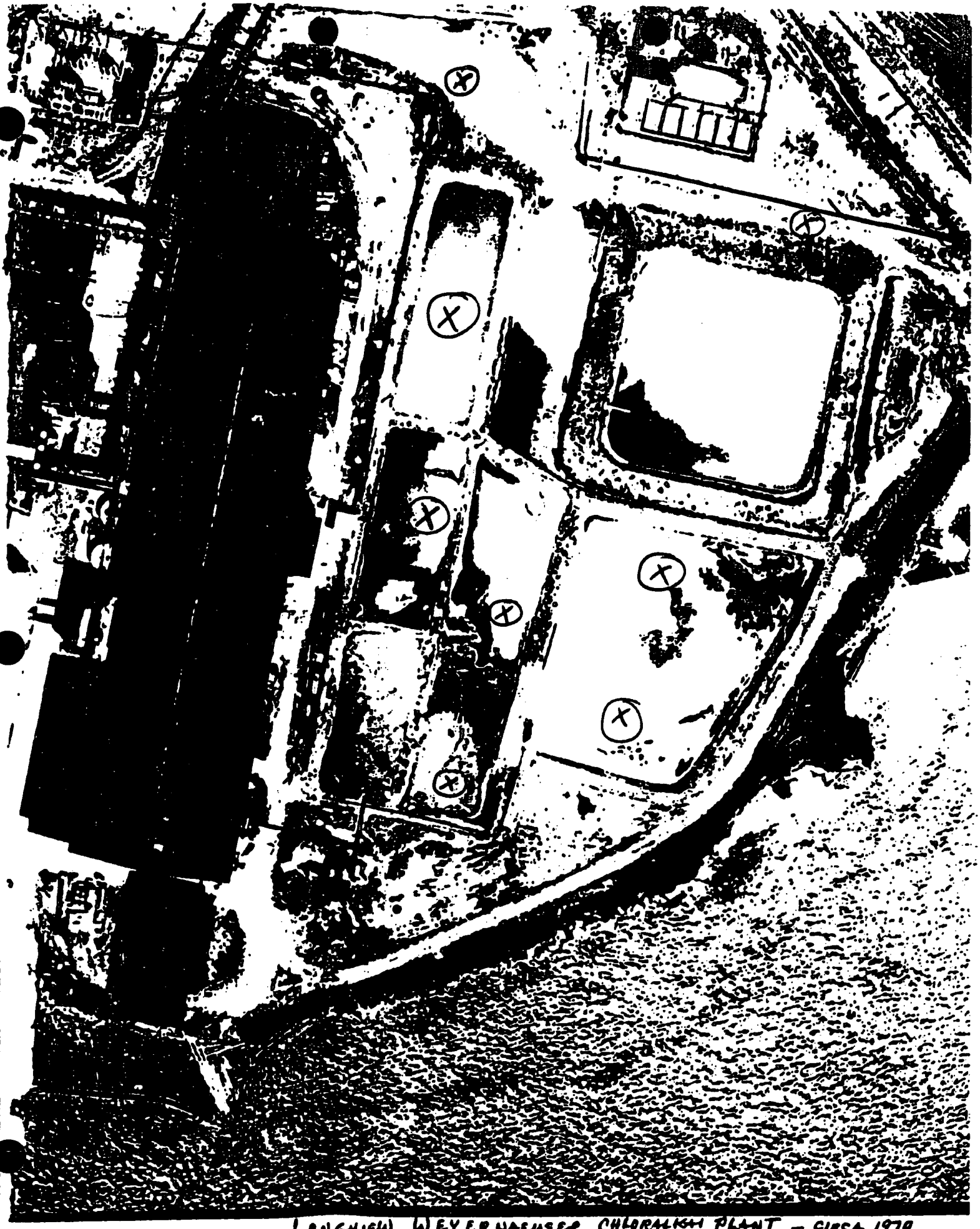
CAUSTIC DITCH AND FORMER BRINE POND SOIL SAMPLE LOCATIONS

WEYERHAEUSER COMPANY

LONGVIEW PLANT

CHLOR-ALKALI FACILITY

COMPILED FROM AERIAL PHOTOS DATED 10-6-76



LONGVIEW WEYERHAEUSER CHLORALKALI PLANT – CIRCA 1970
PRIOR TO BRINE POND REMOVAL.
⊗ = PROPOSED SOIL AND DITCH SAMPLING LOCATIONS

WATER WELLS WITHIN TWO MILES OF FACILITY

ID NO.	Location (T/R/Sec)	Probable Aquifer	Depth (feet)	Installation Date	Yield (gpm)	Owner	Use
1	7N/2W/8	Alluvium	187	1/54	1,000	Continental Grain Co.	Industrial
2	7N/2W/8	Alluvium	309	1/54	1,000	Continental Grain Co.	Industrial
3	7N/2W/91	Alluvium	215	11/35	500	International Paper Co.	Industrial
4	7N/2W/9	Alluvium	215	11/35	500	International Paper Co.	Industrial
5	7N/2W/9	Alluvium	80	NA	NA	International Paper Co.	Industrial
6	7N/2W/10	Alluvium	291	11/72	60	Longview Booming Co.	Industrial
7	7N/2W/9	Alluvium	101	12/74	290	Coulitz County	Industrial and Domestic
8	7N/2W/6	Alluvium	201	NA	NA	Weyerhauser Timber Co.	Industrial
9	7N/2W/6	Alluvium	198	NA	NA	Weyerhauser Timber Co.	Industrial
10	8N/2W/34	Alluvium	45	1/18/60	150	Westport Chemical Co.	Industrial
11	8N/2W/34	Alluvium	111	12/13/83	703	American Cyanamid Co.	Industrial

NA : Not Available

Source: Reference 3

APPENDIX C
PHOTOGRAPHS

Photo 1 (above): Location No. 2, sample MJS1 taken at 5 feet depth.

Photo 2 (below): Location No. 4, sample MJS3 taken at 2 feet depth.

Additional Photos 1-8 taken during the split sampling exercise on 6/16/87 by M.J. Spencer.

Photo 3 (above): Gravelly fill from location No. 5.

Photo 4 (below): Location No. 5, sample MJS5 taken at 10 feet depth.

Photo 5(left): Location No. 1 in old brine pond.

Photo 6(below): Location No. 1, sample MJS6 taken at 5 feet depth.

Photo 7(above): Upper ditch, MJS8.
Photo 8(below): Lower ditch, MJS9.